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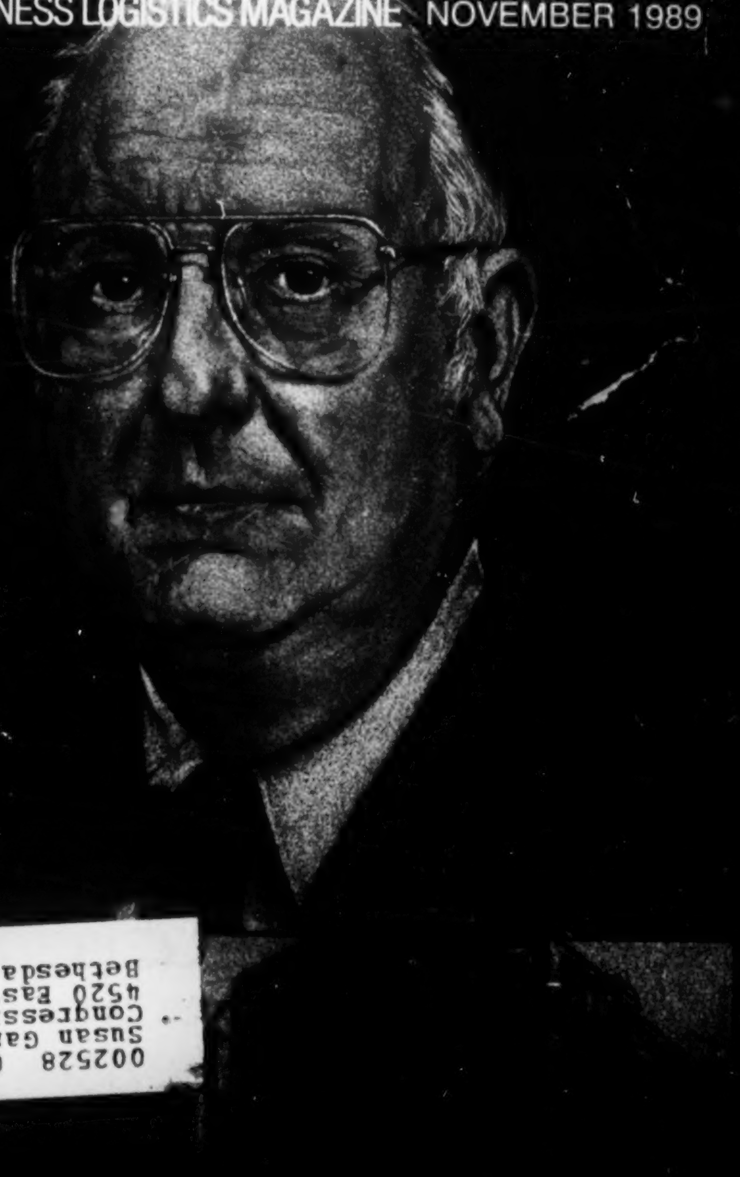

Joe Dewey
1989 NITL Man of the Year

3

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1989 Salary Survey

Contract Logistics Arrives

Preparing a Capital Budget

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NOVEMBER 1989

CHILTON'S
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THE TRANSPORTATION & BUSINESS LOGISTICS MAGAZINE

VOL. 88, NO. 11

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en the going gets tough, Joe ey has always come through. at is undoubtedly why the National Industrial Transportation League has selected Joe as its 1989 Man of the Year. Throughout his 33-year career in transportation, first with U.S. Steel and then with Kerr-McGee, Dewey's hallmark has been getting the tough jobs done.

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LOGISTICS SALARIES 1989: WHERE'S THE INCENTIVE?

According to our latest salary study from Hay Management Consultants, incentives are only at the middle and upper levels of logistics management.

A DISTRIBUTION Staff Report

Incentives are balancing out across industries and continuing to become a larger part of pay packages for middle and advanced management positions within the logistics function. But the gap between bonus practices at lower and upper levels remains wide, raising major questions about the logistics field's commitment to, or ability to fully implement, pay-for-performance programs.

These are the major findings from this year's look at the salary and bonus figures for the logistics positions contained in the compensation database of Hay Management Consultants. Hay, a worldwide firm specializing in human resources issues, maintains the largest database of job description and compensation information in the U.S. It gathers annual salary, total cash compensation and benefits data for one million jobs in 1,200 organizations.

From this database, Hay has extracted information about compensation for 20,000 logistics-related jobs in 500 organizations, reflecting pay patterns through May of 1989. The jobs include positions in traffic and transportation, distribution, warehousing, inventory control, materials management and purchasing.

Caution: Database Variances

This is the second consecutive year that Hay Management Consultants has provided this special analysis of its database to DISTRIBUTION. However, *year-to-year comparisons must be limited to tracking general patterns that are reflected in the findings,* because the organizations and individual positions in the database have varied from sample to sample.

Because the database sample cannot account for regional differences or other competitive factors that determine pay levels, readers are also advised against using the figures presented here as a primary basis for setting pay levels for individual positions. Rather, this report is intended to help establish a base of general information about pay practices in the logistics field.

This year's report includes detailed pay breakdowns for two new logistics-related functions: materials management and purchasing and contracting. The analysis of incentive pay as a percentage of total cash compensation has also been expand-

Table A

COMPENSATION—LOGISTICS FUNCTION*
(in thousands of dollars)

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.	Wholesale/ Retail
Entry professional					
Base Salary	$29.3	28.7	31.6	30.7	29.7
Total Cash	29.5	29.1	31.7	30.8	29.8
Fully qualified professional					
Base Salary	48.3	47.4	51.2	48.0	48.6
Total Cash	50.1	48.9	51.7	49.8	48.7
Seasoned professional/ Middle management					
Base Salary	75.6	71.6	81.1	73.4	68.6
Total Cash	87.3	81.7	94.5	87.3	77.8
Advanced management					
Base Salary	112.4	98.2	109.4	110.6	–
Total Cash	130.9	133.4	132.7	143.2	–
Executive/Head of Function					
Base Salary	–	–	–	141.8	–
Total Cash	–	–	–	177.1	–

Source: Hay Management Consultants
** Includes inventory control, warehousing and distribution, transportation and traffic, materials management and purchasing positions. Total cash = salary + bonuses. Blanks indicate a lack of statistically significant data.*

continued

ed to include more job levels.

Explanation of the job levels used in the analysis are contained in the "Finding Your Level" box (p. 72).

A broader analysis of logistics pay trends, which included portions of the Hay/DISTRIBUTION logistics pay study, was presented in October at the Council of Logistics Management (CLM) conference in St. Louis. An audio tape of the presentation is available from the CLM.

Industry Variances

Looking first at the salary figures for the logistics function as a whole (Table A, p. 58), we note that trends continue for higher base salaries in traditional industries such as heavy manufacturing and chemical/pharmaceutical. However, total cash compensation (base plus bonus) is higher at advanced job levels in light manufacturing and in food and tobacco companies.

A look at the table showing incentives as a percentage of total cash (Table B, at left) confirms that advanced logistics positions are much more heavily leveraged toward performance in the distribution-intensive industries. For example, bonuses are shown amounting to over one-fourth of total cash pay in light manufacturing companies. However, as is described later in this analysis, the gap does seem to be narrowing somewhat, and the more capital-intensive or bulk-oriented industries also now seem to be exchanging pay for performance to a greater extent, at least at middle and upper management levels.

At the three job levels for which statistically significant data is available – entry, fully qualified and seasoned – pay for logistics positions in wholesale/retail firms lags pay for the same levels in other industries.

Job-to-Job Differences

When the aggregate totals for logistics positions are broken down to show data for specific jobs (Tables C through G), pay levels appear to be significantly higher for materials management and purchasing/con-

continued

Table B

INCENTIVES AS A PERCENT OF TOTAL CASH COMPENSATION

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.	Wholesale/ Retail
Logistics (Composite)					
Entry	0.68%	1.37%	0.32%	0.32%	0.34%
Fully Qualified	3.59	3.07	0.97	3.61	0.21
Seasoned	13.40	12.36	14.18	15.92	11.83
Advanced	14.13	26.39	17.56	22.77	–
Executive	–	–	–	19.93	–
Average	7.95	10.80	8.26	12.51	4.12
Materials Management					
Entry	0.67	1.37	0.32	0.64	0.33
Fully Qualified	3.48	3.25	1.34	4.63	0.78
Seasoned	13.79	10.87	15.68	16.85	12.72
Advanced	–	26.09	18.62	24.35	–
Executive	–	–	–	–	–
Average	5.98	10.40	8.99	11.62	4.61
Purchasing/Contracting					
Entry	0.71	2.05	0.31	–	5.69
Fully Qualified	3.45	2.90	0.57	1.80	–
Seasoned	11.72	15.91	11.02	15.20	21.31
Advanced	10.30	26.96	20.48	21.72	–
Executive	–	–	–	–	–
Average	6.55	11.95	8.10	12.91	13.50
Warehousing/Distribution					
Entry	1.54	1.38	0.31	1.53	–
Fully Qualified	6.35	3.28	2.28	2.44	2.79
Seasoned	–	17.81	–	–	13.81
Advanced	–	–	–	–	–
Executive	–	–	–	–	–
Average	3.95	7.49	1.29	1.99	8.30
Transportation/Traffic					
Entry	0.93	2.12	0.32	0.60	–
Fully Qualified	8.19	3.30	0.78	1.76	–
Seasoned	9.66	–	14.66	14.24	–
Advanced	–	–	–	–	–
Executive	–	–	–	–	–
Average	6.26	2.71	5.26	5.53	–
Inventory Control					
Entry	0.34	0.67	0.60	–	–
Fully Qualified	3.27	4.76	1.64	3.92	–
Seasoned	–	–	–	–	–
Advanced	–	–	–	–	–
Executive	–	–	–	–	–

Source: Hay Management Consultants

In previous years, incentives were far greater for purchasing positions than for other logistics-related functions, presumably because purchasing managers have more direct contact with outside vendors. This year's incentive data showed a closing of the gap, however, with comparable incentive opportunities also being extended to seasoned and advanced-level managers in materials management, warehousing/distribution and transportation/traffic. Within all functions, including purchasing, incentives at lower job levels remain minimal. Blanks indicate a lack of statistically significant data.

tracting positions than for the more traditional functions (traffic/transportation, warehousing/distribution and inventory control).

Look, for example, at pay at the seasoned job level for traffic/transportation (Table C, below), materials management (Table D, below) and purchasing/contracting (Table E, p. 68). For almost all industries where sufficient data is available, both base pay and total cash are significantly higher for the latter two functions, particularly for materials management jobs.

At the seasoned level for heavy manufacturing companies, transportation/traffic positions pay an average base of $74,100 and an average bonus of $12,500. At the same level within the same industry, materials management positions pay an average base of $75,000 and an average bonus of $12,000; the total package is worth an additional 6.3 percent. And comparable purchasing/contracting positions pay an average base of $78,300 and an average bonus of $11,400; the total package is worth an additional 8.4 percent.

Table C

COMPENSATION: TRAFFIC/TRANSPORTATION
(in thousands of dollars)

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.
Entry professional				
Base Salary	$31.9	27.7	30.7	33.0
Total Cash	32.2	28.3	30.8	33.2
Fully qualified professional				
Base Salary	52.7	49.8	50.9	50.2
Total Cash	57.4	51.5	51.3	51.1
Seasoned professional/ Middle management				
Base Salary	73.9	–	78.0	74.1
Total Cash	81.8	–	91.4	86.4

Source: Hay Management Consultants
Total cash = salary + bonuses. Blanks indicate a lack of statistically significant data.

Table D

COMPENSATION – MATERIALS MANAGEMENT
(in thousands of dollars)

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.	Wholesale/ Retail
Entry professional					
Base Salary	$29.6	28.7	31.5	31.0	29.6
Total Cash	29.8	29.1	31.6	31.2	29.9
Fully qualified professional					
Base Salary	47.2	47.6	51.4	47.4	51.2
Total Cash	48.9	49.2	52.1	49.7	51.6
Seasoned professional/ Middle management					
Base Salary	75.0	70.5	82.3	76.5	70.0
Total Cash	87.0	79.1	97.6	92.0	80.2
Advanced management					
Base Salary	–	100.3	110.6	98.8	–
Total Cash	–	135.7	135.9	130.6	–

Source: Hay Management Consultants
Total cash = salary + bonuses. Blanks indicate a lack of statistically significant data.

Drawing a Clear Bonus Line

A notable pattern is the major gap that exists – across all industries and for all logistics functions – between lower job levels and middle and upper management positions. As shown in the table detailing incentives as a percentage of total cash (Table B, p. 62), bonuses at the fully qualified level or below are being held under 4 percent on average, and in many cases are significantly lower than that. Yet bonuses from the seasoned level on up never fall below 11 percent, and in many cases are more than double that minimum.

Again, while year-to-year comparisons must be qualified, it is interesting to note that, at the levels where bonuses are significant, variances from industry to industry appear to be evening out. While, as noted earlier, light manufacturing and food/tobacco companies still take the lead in using contingent pay to coax performance out of their logistics functions, percentages are up significantly from last year's levels for heavy manufacturing and chemical/pharmaceutical firms.

In fact, heavy industry now appears to be doing the best job of pushing incentives to lower levels. Note, for example, that bonuses in heavy manufacturing average 8.19 percent for fully qualified transportation/traffic professionals, and 6.35 percent for fully qualified warehousing/distribution professionals – by far the two largest percentages for any logistics positions at that level.

Additional Analyses

This year, two additional analyses were conducted. First, comparisons of pay for logistics jobs at various lev-

continued

els were made with overall pay at those levels within both the industrial and financial sectors, to see if logistics can be characterized as a high, low or average paying profession. Second, a regional breakdown of logistics pay was prepared, to see if the pay market for logistics postions is better in certain parts of the country.

At-Large Comparisons

When logistics pay is compared with all positions in both the industrial and financial sectors (Table H, p. 70), clear patterns emerge. At lower job levels, logistics positions are considerably higher paying compared with similar levels in the financial sector, but lower than all-industrial norms. The shortfall *vis a vis* all industrials widens when bonus pay is considered with base salaries – again indicating that logistics has been unusually slow about pushing incentives to lower-level positions.

The incentive factor works to logistics' advantage, however, when middle and upper-middle management positions are studied. At the seasoned professional level, for example, base pay for logistics positions is below the all-financial or all-industrial norm, but when incentive pay is added in both cases, logistics positions exceed the norms. At the advanced level, logistics positions are shown to be lower paying than either of the all-sector norms, but incentives lessen the difference in both cases.

Table E

COMPENSATION: PURCHASING/CONTRACTING
(in thousands of dollars)

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.	Wholesale/ Retail
Entry professional					
Base Salary	$27.9	28.7	32.2	–	31.5
Total Cash	28.1	29.3	32.3	–	33.4
Fully qualified professional					
Base Salary	50.3	46.9	52.2	49.1	–
Total Cash	52.1	48.3	52.5	50.0	–
Seasoned professional/ Middle management					
Base Salary	78.3	74.5	79.1	71.4	76.8
Total Cash	88.7	88.6	88.9	84.2	97.6
Advanced management					
Base Salary	115.8	95.1	110.3	120.4	–
Total Cash	129.1	130.2	138.7	153.8	–

Source: Hay Management Consultants

Total cash = salary + bonuses. Blanks indicate a lack of statistically significant data.

Table F

COMPENSATION: INVENTORY CONTROL
(in thousands of dollars)

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.
Entry professional				
Base Salary	$29.4	29.6	33.0	–
Total Cash	29.5	29.8	33.2	–
Fully qualified professional				
Base Salary	50.3	46.0	53.9	56.3
Total Cash	52.0	48.3	54.8	58.6

Source: Hay Management Consultants

Total cash = salary + bonuses. Blanks indicate a lack of statistically significant data.

At the executive level, incentives again help logistics positions fare surprisingly well. However, these indexes only represent "executive" positions comparable to the head of the logistics function, and do not include top-level positions such as heads of manufacturing or business units, CFOs, COOs or CEOs – positions where both base salaries and incentive payments can quickly dwarf those earned by the cream of the logistics crop.

Regional Breakdowns

If your're just entering the logistics profession and are willing to relocate, the operative directions seems to be South or West. If you want to assure yourself of better-than-average pay no matter what level of logistics job you have, think about sinking down roots in Louisiana, Oklahoma or Texas.

These are the primary findings when base pay in logistics is studied on a regional level (Table I, p. 70). Entry-level positions appear to pay best in the South Central regions, with West Central and West region states also offering above-par starting pay. The South Central's edge dwindles at the fully qualified and seasoned levels, where pay is relatively even across the board. At the advanced level, however, South Central and Southeast companies appear to be clearly paying a premium for logistics talent.

When bonuses (not shown in the table) are added to the regional mix, some additional findings of interest emerge. For example, while data on

continued

Table G

COMPENSATION: WAREHOUSING/DISTRIBUTION

(in thousands of dollars)

Position	Heavy Mfg.	Light Mfg.	Chem./ Pharm.	Food & Tob.	Wholesale/ Retail
Entry professional					
Base Salary	$31.9	28.5	32.2	32.1	–
Total Cash	32.4	28.9	32.3	32.6	–
Fully qualified professional					
Base Salary	51.6	47.2	51.5	51.9	45.3
Total Cash	55.1	48.8	52.7	53.2	46.6
Seasoned professional/ Middle management					
Base Salary	–	72.9	–	–	67.4
Total Cash	–	88.7	–	–	78.2

Source: Hay Management Consultants

Total cash = salary + bonuses. Blanks indicate a lack of statistically significant data.

Table H

LOGISTICS VS. JOBS AT LARGE

(Logistics Pay = 100)

	All Financial Sector Positions		All Industrial Sector Positions	
Job Level	**Base**	**Base + Bonus**	**Base**	**Base + Bonus**
Entry	80	80	105	106
FQ Prof.	90	91	102	104
Seasoned	103	98	102	104
Advanced	108	104	104	103
Executive	113	98	98	96

Source: Hay Management Consultants

Table I

LOGISTICS BASE PAY: REGIONAL BREAKDOWNS

(National Avg. = 100)

Job Level	NE	SE	E. Cen.	S. Cen.	W. Cen.	West
Entry	96	97	98	111	101	103
FQ Prof.	97	97	101	103	97	96
Seasoned	102	100	101	100	94	97
Advanced	99	107	95	118	94	–
Executive	97	–	96	–	100	–

Source: Hay Management Consultants

Blanks indicate a lack of statistically significant data.

Regional definitions:

Northeast–CT, DE, DC, ME, MD, MA, NH, NJ, NY, E. PA, RI, VT, VA
Southeast–AL, FL, GA, MS, NC, SC, TN
East Central–KY, N. IL, IN, S. MI, OH, W. PA, WV, S. WI
South Central–LA, OK, TX
West Central–AR, S. IL, IA, KS, N. MI, MN, MO, NE, ND, SD, N. WI
West–AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, WY

pay for logistics executives is spotty, the data that is available shows that heads of the function in some regions are clearly being leveraged more than others. Where logistics executives in the Northeast rank below normal when just base salaries are considered, their pay when bonuses are included rises to 106 on the scale of 100. Conversely, executive pay in the East Central region becomes even less competitive—from 96 to 93—when incentives are added.

Incentives are also responsible for widening the advantage that advanced-level professionals appear to enjoy in the South Central region. When bonuses are added, that region earns a 127 on the scale of 100. Remember, however, that these indexes are based strictly on pay practices for the most recent reporting period (May 1988-May 1989). It may be that unusually large or one-time bonuses were earned by logistics managers in that region during that period, because of special programs within certain companies. It remains to be seen whether the sizeable pay advantage can be sustained on a year-to-year basis.

Geography is only one factor in determining how companies set pay scales for logistics positions. Perhaps the strongest influence of all is corporate culture. Many companies simply have a compensation history that defies logical explanation. Some companies have always paid well, and others have always paid at the low end of the scale. If change is needed in these organizations to spur sales, enhance quality, or improve productivity, it is unlikely that pay will be used as the primary vehicle of that change. Rather, the pay policies of these organizations can usually be expected to hold firm in the midst of all other change; their cultures breed the attitude: "This is the way we pay."

Beyond the influence that the overriding culture of a company can have on pay, the culture is very much of an influence on the status of logistics departments within that compa-

continued

ny. Is logistics seen as a contributor to profit, or just a cost center? Is it stagnant or even dwindling, with many of its services being contracted out? Is logistics an area where the company is making significant investments and technological advances, or does it have a bureaucratic role? Where is logistics positioned within the organization structure, and how does it fit in operationally and strategically? Do the top logistics managers have the ears of key corporate decision-makers, or are they really nothing more than glorified order takers and box kickers?

The answers to these kinds of culture- and structure-related questions can provide real clues as to why logistics pay seeks the level it does in selected units, companies or industries. For logistics, too, the pay issue can quickly boil down to: "This is the way we pay *logistics* people – end of discussion."

Closely related to the role of culture is the positioning of a company, and its logistics function, in the production-to-market chain. Studies of the Hay database, have indicated that companies that are closer to the consumer tend to pay higher than those that are closer to the production end. That's why a smaller food distribution company might pay more for an inventory manager than a large agricultural co-op.

Most likely, the same pattern should hold for logistics positions from industry to industry, company to company, and even within the same company.

Some industries and companies are also clearly more distribution-intensive than others, and one can certainly expect this to be an influence on pay, just as in professions that are particularly critical or in high demand. Studies of the Hay database have shown that utilities and petroleum companies must always pay at high levels to attract the best engineers, even when regulations and other outside influences may keep their financial performance low.

The presence, on average, of such a well defined gap between bonuses for lower and middle/upper logistics positions would seem to indicate that the industry is still struggling as it seeks to establish performance-based pay programs at lower levels. More than likely, the hangup continues to be an organization's difficulty in establishing, on either a group or individual basis, proper measurement standards for lower-level jobs (*Are You Prepared to Perform?*, January 1989, p. 64). ■

FINDING YOUR LEVEL

The Hay Group/DISTRIBUTION study of compensation and benefit practices in the logistics profession divided positions into five job levels, according to the definitions below.

Caution: In a profession known for proliferation and broad overlap of titles, the "typical titles" provided for each definition may not be analogous with those used in your organization. Definitions above the second level must be examined carefully, as job content will vary dramatically according to the way a particular organization defines a logistics department's size, complexity and importance.

Entry Professional – Typically filled by incumbents with a college degree or equivalent and less than one year of work experience. Assignments are usually designed to provide exposure to the organization and/or the function, are relatively short-term, and are reviewed frequently for progress toward end results. In the logistics field, typical entry-level titles include buyer, inventory control analyst, expeditor, rate analyst, shipping clerk, and traffic coordinator and administrator.

Fully Qualified Professional – At this level, incumbents are expected to be able to handle 80 to 90 percent of work assignments without close supervision or direction. Incumbents routinely try to solve problems by applying theories and policies of the discipline. Judgments are supported by the equivalent of a college degree and three to five years of relevant work experience. In the logistics field, typical fully qualified professional titles include: inventory control specialist, customer service manager and traffic/transportation manager.

Seasoned Professional/Middle Management – Incumbents at this level are highly seasoned professionals, resulting from the equivalent of a college degree and seven or more years of relevant experience in the discipline. Incumbents are given broad direction on large projects, and are often called upon to discuss problems. The upper end of this level also includes first- or second-level managerial positions accountable for achieving results through a subordinate staff. In the logistics field, typical seasoned professional/middle management titles include: warehouse/DC manager, superintendent of inventory control, purchasing manager, materials manager, fleet manager and distribution manager.

Advanced Management – Typically, this level includes the head of a major functional area or discipline who is accountable for integrating several areas of technical knowledge/endeavor and achieving results through a subordinate staff. In the logistics field, typical advanced management titles include: director of transportation/distribution, director of warehouse operations, procurement director, director of fleet operations and director of logistics.

Executive/Head of Function – This top-level postion has direct access to corporate management and multifunctional responsibilities. In logistics, typical executive titles include: executive vice president of logistics, vice president of transportation and vice president of materials management.

Career Patterns

LOGISTICS CAREERS: A VIEW OF THE FUTURE

This year's CLM career patterns survey finds logistics maturing as a discipline and becoming more established in the corporate framework.

*By James M. Masters, Assistant Professor, and Bernard J. LaLonde,
Mason Professor of Transportation & Logistics, Ohio State University*

Figure 1

LOCATION OF THE LOGISTICS FUNCTION IN THE ORGANIZATION

Department	Respondent	Superior	Next Higher Superior
Logistics	65%	22%	7%
Operations	8%	13%	6%
Division	10%	17%	16%
Marketing	7%	15%	3%
Production	2%	9%	5%
Other	5%	5%	2%
Corporate	3%	19%	61%

Figure 2

DIMENSIONS OF THE LOGISTICS FUNCTION

Dimension	Logistics Activity	Direct Responsibility	Time Spent
Traffic Management	98%	78%	21%
Warehousing	97%	76%	17%
Inventory Management	81%	61%	13%
International Distribution	83%	69%	9%
Plant & Warehouse	73%	67%	9%
Order Entry	68%	51%	10%
Packaging	51%	23%	4%
Procurement	49%	35%	10%
Product Planning	36%	33%	7%
Sales Forecasting	32%	17%	5%
General Management	–	–	24%
Other	–	–	18%

For the last 18 years, the Logistics Research Group at Ohio State University has conducted an annual survey of the career patterns of senior logistics executives in major American corporations.

The purpose of this work is to establish baseline information about the status of logistics as a profession, as well as to gain an understanding of how the logistics function is integrated into the organizational structure of the firm, and to determine the specific responsibilities of the logistics executive. In recent years the scope of the survey has been broadened to gather logistics executives' opinions about future trends in logistics practice.

Specifically, this year's survey sought to answer these questions:

- What is the demographic profile of the successful logistics executive?
- How are logistics functions structured, organized and managed within the successful firm?
- What knowledge, skills and specific competencies are expected of the entry-level, college graduate management trainee entering the logistics field today?

Respondents were asked to categorize the firm's organization of the logistics function. In 18 percent of the firms, a logistics department existed in each division; 37 percent reported that the logistics organization was centralized. Another 33 percent reported that logistics functions were split, with some performed by divisions and some by a central staff.

continued

Respondents were asked whether they considered their job to be primarily line or staff in nature, that is, whether they had direct responsibility and control over logistics decision-making or whether their job was primarily advisory. Forty-six percent replied that the job involved direct responsibility, while only 6 percent saw their role as purely advisory. The remaining 48 percent reported that the job included direct responsibility over some logistics functions and advisory responsibility for others.

In an attempt to gauge the maturity of the logistics organization, we asked in what year the firm first appointed a senior executive-level manager with a formal job title and responsibility in the distribution or logistics area. Since 1980, firms have established such a position at a rate of about 6 percent per year; 19 percent report that their firm has not yet done so.

Figure 3

LOGISTICS EXECUTIVE COMPENSATION (median salary plus bonus)

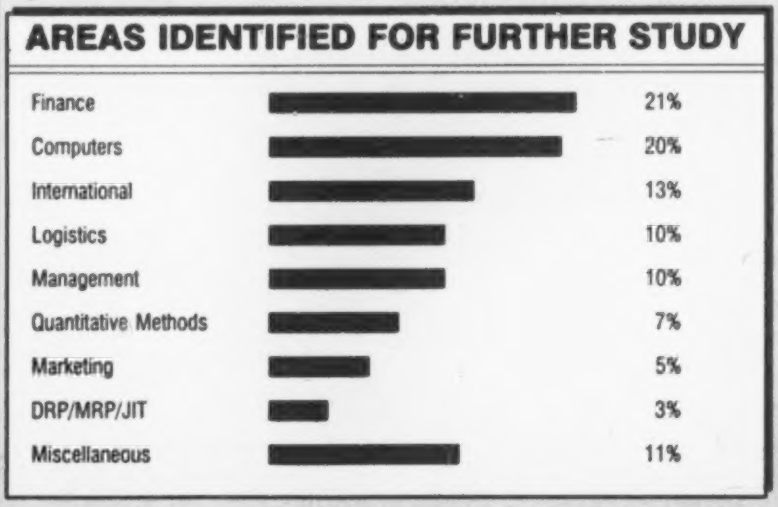
JOB TITLE	HIGHEST THIRD	MIDDLE THIRD	LOWEST THIRD	ANNUAL RAISE
Manager	$ 85,000	$ 65,000	$48,000	6%
Director	106,000	80,000	65,000	8%
Vice President	150,000	105,000	78,000	5%

Figure 4

HISTORICAL COMPENSATION COMPARISON

Year	Manager	Director	Vice-President
1989	$65,000	$80,000	$105,000
1988	57,000	75,000	122,000
1987	60,000	74,500	107,400
1986	–	–	–
1985	55,500	72,400	106,400
1984	54,800	70,800	93,900
1983	49,300	58,500	85,600

Figure 5



In 65 percent of all cases, the survey respondent is assigned to a department or section that is named *Logistics* or *Distribution* (Figure 1, p. 76). Eight percent work in *Operations*, and 10 percent are attached to a product *Division*. In 22 percent of all cases, the respondent's superior is assigned to a *Logistics* department. In 61 percent of all cases, the respondent's next higher superior (the respondent's superior's superior) is located at the *Corporate* level.

Many different variations of hierarchical structure were reported within this simple framework. One common arrangement, for example, was a Director of Logistics in charge of a Logistics Division who reported to a corporate vice president or president. Another typical situation would be a Distribution Manager of a Distribution Department who reported to the Director of Operations of the Operations Division, who in turn reported to the CEO or the Chairman of the Board.

Thirty-seven percent of our respondents had the job title of manager, 41 percent were directors and 22 percent were vice presidents. In 56 percent of all cases, the respondent's next higher superior was the President or Chairman of the Board.

In an attempt to measure the scope of the logistics function, respondents were presented with a list of logistics activities (Figure 2, p. 76) and asked to specify if the activity was considered to be a logistics function by the firm, if the respondent had direct responsibility for the activity, and how much time the respondent spent in the activity. Traditional logistics functions, such as traffic management and warehousing, are almost universally viewed as part of the logistics domain. Yet only 36 per-

continued

Figure 6

ENTRY LEVEL SKILL REQUIREMENTS

Skill Area	Degree of Proficiency Expected										
	None	Basic Familiarity			Good Working Knowledge				Well Developed Expertise		
	0	1	2	3	4	5	6	7	8	9	10
MICROCOMPUTERS											
Spread-sheet programs							B		M		
Data base programs						B	M				
Graphics packages					B		M				
Traditional programming			B	M							
Expert systems shells			B	M							
INFORMATION TECHNOLOGY											
MRP/MRP II						B		M			
DRP						B		M			
EDI						B	M				
Bar coding					B		M				
Inventory control							B	M			
MANAGEMENT SKILLS											
Supervision						B	M				
Negotiation						B	M				
Writing								B		M	
Speaking								B		M	
Analytic ability							B		M		

Figure 7

FACTORS WHICH WILL INFLUENCE THE DEVELOPMENT OF THE LOGISTICS FUNCTION IN THE NEXT DECADE

Factor	Response
Cost Control	17%
Customer Service	16%
EDI & Information Technology	15%
Global Logistics	10%
Corporate Growth	8%
Improved Logistics Controls	6%
Integration of Logistics Functions	5%
Corporate Recognition	4%
Personnel Issues	4%
JIT	4%
All Others	11%

cent of these executives worked on product planning, and only 32 percent were involved in demand forecasting. General management tasks, such as supervision and administration, consumed 24 percent of most executives' working day.

Executives were asked to report their total annual cash compensation, including bonus. These results are shown by job title in Figure 3, p. 80. The statistics reported are median values for the highest, middle and lowest third of each job category. Statistical analyses were performed to determine which factors might help to predict a respondent's salary level. Age, years in the position, and so forth, show no statistically significant relationship to compensation. Level of responsibility is the single most important predictor of compensation. The executive's budget responsibility and the firm's sales volume also help to predict the executive's salary level. (For more details on logistics compensation trends, see *Logistics Salaries 1989: Where's the Incentive?*, p. 58).

A comparison of this year's compensation data to that of prior year's studies is shown in Figure 4, p. 80. Data from 1986 is not included because the sample of executives studied in that year was not comparable.

Survey participants were asked a series of questions to capture their forecasts about the future of logistics. First, respondents were asked to identify topics they would study if they could return to school for three months. The results are similar to those reported over the last few years (Figure 5, p. 80). Finance and computers once again were dominant responses. It is also worth noting that *Management* was high on the list. This area included executives who wanted to polish their communication skills and their ability to work with, motivate and negotiate with people.

Next, executives were asked to define the nature and extent of the skills they require in newly hired management trainees (Figure 6, p. 82). Capabilities in microcomputer

continued

literacy, information technology and general management were described. Respondents chose a number from zero to 10 that best described the degree of proficiency expected of a new graduate of a bachelor program in business administration with a major in logistics (B), and also of a new MBA in logistics (M). A zero indicates that no proficiency in the area is expected, while a 10 means that well developed expertise is expected.

In the microcomputer area, spreadsheet programs are almost universally recognized as required tools for the entry-level manager. Database management software and graphics packages are not far behind. Skills in programming languages, like BASIC or COBOL, and artificial intelligence are viewed as areas where only basic familiarity is needed.

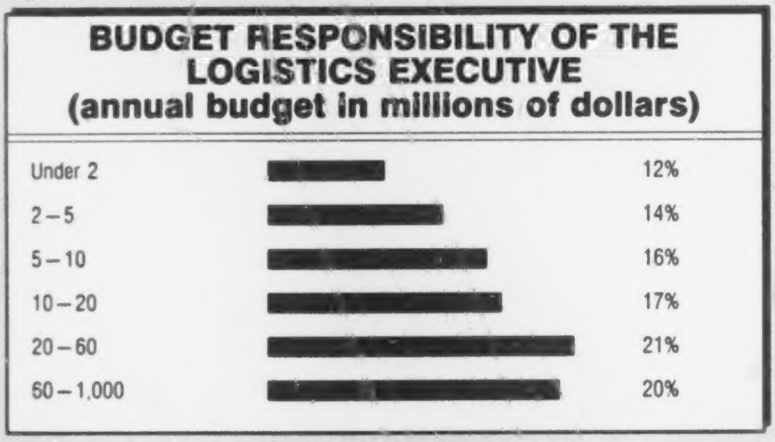
Good working knowledge of information technology is expected. MRP and DRP should be very familiar to the job candidate. EDI and automatic identification should also be well understood. Interestingly, traditional inventory concepts, such as economic order quantity, received the highest ratings here.

Noteworthy about respondents' expectations regarding general management abilities are the high ratings given to writing and speaking skills, and general analytic and problem-solving abilities. Logistics executives are looking for technically literate managers, but they stress the need for interpersonal skills and analytic thinking to deal with the problems logistics managers face.

Finally, respondents were asked to identify two major factors that would influence the growth of the corporate logistics function in the next decade (Figure 7, p. 82). There was great variety in the responses here; however, 17 percent identified *Cost Control*, and 16 percent identified *Customer Service*. *Corporate Recognition* indicates respondents who feel that future growth of the logistics function in their firm will depend upon their success in convincing senior management of the value of adopting an integrated approach to the management and control of logistics activities. *Integration of Logistics Functions* includes respondents who feel their logistics functions must be more closely integrated with other areas, such as marketing and production, or that logistics must incorporate new activities, such as purchasing, into its responsibility.

Respondents were asked to specify their total logistics budget responsibility, including payroll and services. The average figure reported was $17 million, but budgets vary greatly (Figure 8, left). Twelve percent reported budgets under $2 million, but 20 percent controlled budgets in the $60 million to $1 billion range. ■

Figure 8



For details on the methodology and other results of the Ohio State study, contact Professor James M. Masters at (614) 292-0797.

CONCLUSIONS AND IMPLICATIONS

- **Logistics career patterns remain stable.** This year's survey once again reveals a large body of experienced logistics practitioners who are carving out successful careers in logistics.
- **Logisticians expect a more complex world ahead.** External forces, such as globalization and mergers and acquisitions, are complicating life for the logistician. Changing technology, especially information technology, will create both challenges and opportunities for logistics management.
- **Logistics requires a mix of technical and interpersonal skills.** Senior management clearly recognizes that technical skill alone will not lead to success in the future. The ability to recognize problems, devise solutions and communicate ideas will remain the hallmark of the successful logistician.

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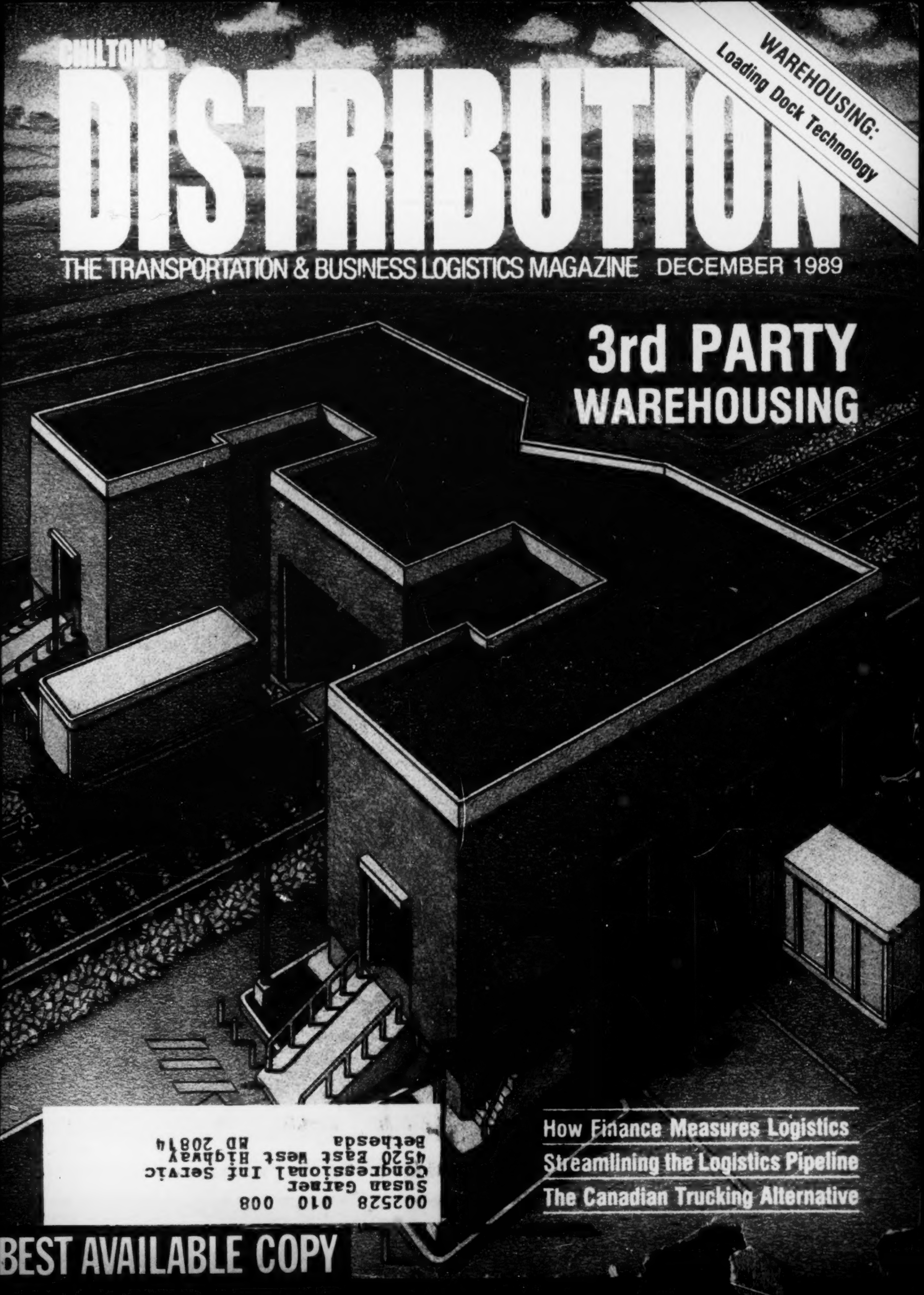

3rd PARTY WAREHOUSING

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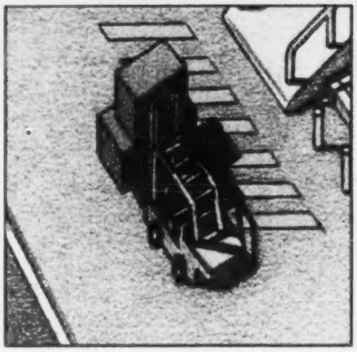
VOL. 88, NO. 12

COVER STORY

30 3rd PARTY WAREHOUSING

What separates contract warehousing from public or private? Some say dedication of a facility, personnel, and customized inventory and material handling systems. Ideally, the warehouse vendor should become an extension of your company. Here are 16 questions and answers to help you decide if you're ready to make the switch to third-party warehousing.



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Adding Value With Logistics

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LOGISTICS TRENDS

How Bay area businesses coped with the big quake

Jim Watson can afford a big sigh of relief. "We just had an earthquake drill the week before," says the president of Skyway Freight Systems, recalling the 7.1 temblor that shocked the Bay Area on October 17. Skyway's international headquarters is in Watsonville, one of the hardest hit communities.

But Skyway didn't miss a beat. Every department had an assigned "emergency manager" who took charge of evacuation procedures. The huge computer system that is the heart of Skyway's freight monitoring network was switched over to an independent backup generator, losing only five minutes of normal operating time. A special hydraulic floor in the main computer room, installed specifically for incidents such as this, kept the computers level while the earth did its thing. Customer service 800 lines were immediately rerouted through Skyway's Chicago office. "We never missed a call," says a relieved and proud Watson. "All our contingency plans were transparent to our customers."

Contingency plans to the rescue

San Francisco-based Del Monte Corp. had its downtown headquarters badly shaken. The quake struck in the middle of the company's crucial "fall roundout." October 17 was the company's second biggest sales day of the year. Computers went down, threatening massive problems in the order processing system. Hardy Miller, director of distribution services, noted that an 8-person "disaster team" had until 2 p.m. the following day to rejuvenate the crippled system, or else everything had to be switched to a backup "hot site," which may have caused many delays. "We went back on-line at 1 p.m. Wednesday," recalls Miller, "and we were able to ship orders and bills of lading out to 22 plants and 11 DCs on Thursday morning." There was no damage to product at Del Monte's one local DC, and Miller credits that to stretch wrapping and proper stacking practices. "It's everything you do the other 364 days a year that helps you prepare for a situation like this," he maintains.

"We've been through a major fire, a big labor strike and now this," sighs Safeway Traffic Coordinator Barbara Cooke, based in Fremont, Calif. Immediately after the quake, Cooke teamed up with Safeway's dispatcher in the Oakland office to reroute trucks away from the myriad of damaged interchanges and overpasses. "After those 15 seconds, it became more than a business," she remembers. "People were relying on us."

So is business back to normal? According to Skyway's Watson, it never really went off track. "Within hours of the quake," he recalls, "we had customers in New York and Boston calling and saying 'We're really sorry to hear about it—now where's my freight?' "

A demographic profile of the logistics executive

According to the annual CLM career patterns survey, conducted by Ohio State University, the average logistics executive has been in his or her current position for four years, with the company for 11 years and in the logistics field for 17 years. This pattern is repeated at all levels of responsibility, pointing to the professional nature of the logistics career. An executive position in logistics is seldom a short-term, lateral career move for an individual whose expertise is in another area. Rather, the typical logistics executive has an extensive background in logistics and has worked his or her way up the ladder.

More evidence of the professional nature of the discipline can be found in the educational background of the survey respondents. About 89 percent hold a baccalaureate degree, with 62 percent in business. And 45 percent hold graduate degrees, with 88 percent also in business. What might be more surprising is that 12 percent of the graduate degrees and 8 percent of the baccalaureate degrees are in logistics.

Executives were also asked to estimate how their 1990 logistics budget would compare with their 1989 actual costs. The average estimate for total logistics costs was 4 percent growth over 1989. Individual cost categories ranged from 1 percent for inventory carrying costs to 5 percent for fuel.

A LOGISTICS BUDGET FORECAST FOR 1990

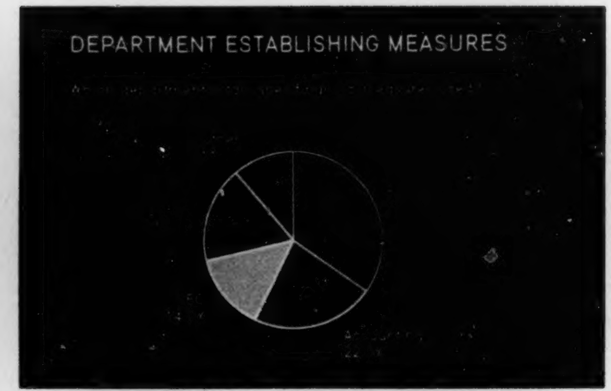
COST CATEGORY	PERCENTAGE CHANGE
Rail	2%
Motor LTL	3
Motor TL	3
Private Fleet	2
Private Warehouse	2
Public Warehouse	3
Fuel (Gasoline)	5
Fuel (Diesel)	5
Inventory Carrying Cost	1
Total Logistics	4

Modest growth

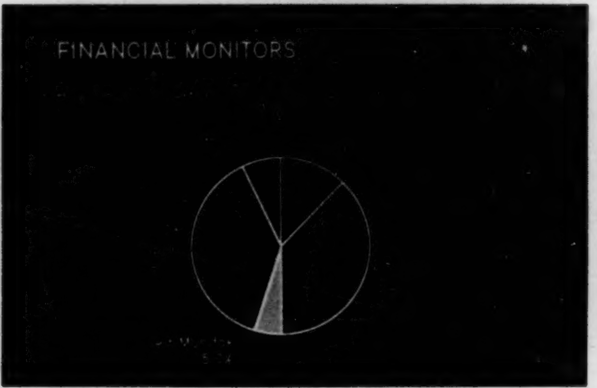
PRICELESS WORK?

Pinning down the best measure of logistics' financial performance is like trying to take out a loan to buy the Mona Lisa. The discipline has limitless ways to get credit.

By Joseph V. Barks, Contributing Editor



In these finance-driven times, it's not surprising to see that in over one-third (35 percent) of the cases, finance departments are setting the ground rules for our responding companies. And if it's not finance, it's most likely to be its evil twin, accounting (22 percent). An encouraging 18 percent of the responding companies, however, say logistics is left to its own devices. Another 14 percent say the rules are set at the very top.



The finance department does more than set the rules, it also referees in at least 38 percent of the cases. But an equal percentage of the responding logistics departments are monitored by their own leader, and another 5 percent filter the financial checkups down to the logistics managers themselves. Surprisingly, 12 percent of the companies say measures are never taken, even though they have been established.

Cynics have defined finance as "the art of managing revenues and resources for the best advantage of the manager." If that's indeed the case, logisticians are either the most versatile or the sloppiest practitioners of the art. A recent Dialogue survey, on how organizations measure and emphasize financial performance in logistics, revealed a spectrum of techniques from crude, stick-figure attempts to true numerical masterpieces.

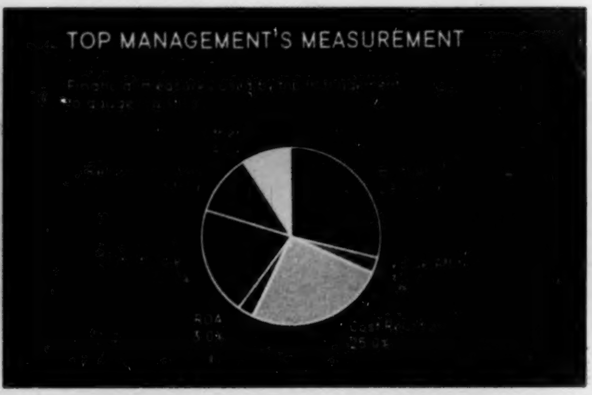
The survey responses make it clear that logistics is no longer being measured strictly in negative terms, such as costs, lost business opportunities, damaged goods and shortages. Our readers report that many positive measures, such as contributions to sales, profits, productivity, quality and customer satisfaction, are now also being used. But consistency from one company to the next is still as unheard of as a paint-by-numbers Renoir. As one anonymous respondent says, "The whole area remains a frontier." And perhaps that is as it should be. There are certainly some very good reasons why so much variety was displayed in the answers to our objective survey questions about the best way to measure logistics' financial performance.

Despite what assembly-line MBAs may tell you, financial criteria should be very much dependent on individual corporate priorities, and adjusted according to operating situations that can change considerably from company to company.

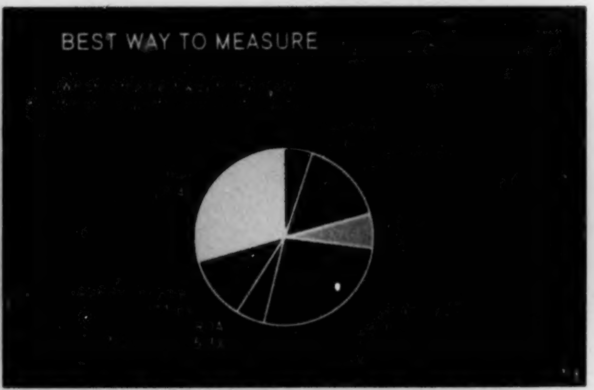
But the variety exhibited in the survey feedback seems to consist of as many parts confusion as customization. Some respondents seemed unable to properly distinguish rudimentary measures of transportation or distribution efficiency, such as carriers' on-time performance and inventory stockouts, from broader financial barometers. Others recognized the difference, but appeared unclear on how to properly convert function-specific measures into fiscal terms. Finally, some respondents didn't seem broad-minded enough to relate anything other than costs to the realm of financial assessment.

Countless Categories

Without knowing more about an individual logistics department and its company's competitive situation, however, it's hard to separate the genuine financial measures from the fakes. In logistics, as well as in the art world, what first appears to be primitive may actually



When assessing the function's overall performance, the financial measures that take a negative or neutral approach – adherence to budget (29 percent), cost reduction (25 percent) and cost of sales (20 percent) – still get the lion's share of the emphasis within the logistics purview. Among the more proactive approaches, return on sales (11 percent) currently has the most support.



It was difficult to drop the answers we received to this open-ended question into specific slots. In many cases, respondents gave more than one answer (these were categorized as "other," giving that slot an unusually large percentage). In general, however, respondents seemed to advocate using more proactive measures (cost of sales and return on sales) than those now being used. Compare, for example, the minimal support displayed here for the adherence-to-budget measure (5 percent) with the 28 percent shown above, which indicates the measures that are now in use. Similarly, only 15 percent say they think it makes sense to be judged in terms of cost reductions, although 25 percent are now measured that way. Clearly, some disgusted faces are now being made when logistics professionals are asked to take their financial medicine.

prove to be quite sophisticated, and what first appears to be avant-garde may prove to be the same old trash. With that in mind, here's a general rundown of the more popular categories of financial measures for logistics that our readers now say are in use:

Damage Control – The idea here is to first try to avoid injury and, failing that, to stop the bleeding as quickly as possible. For Daniel P. Kohler of Bartlett, Ill., that means applying direct pressure to the cost of sales. For Thomas Shedlarski of East Northport, N.Y., it's a more detailed procedure that calls for the calculation of "shipping costs, less late receiving dates, less damaged goods, with associated damaged goods costs." Examples of this last measure, says Shedlarski, can include the lead-time needed to receive or rework damaged goods, idle production, or the costs incurred because of late shipment of manufactured parts.

Savings – "Direct cost reduction" is the ultimate measure, says G. Hansen of Milwaukee, in a typical comment. This viewpoint comes from the school that still sees logistics as a cost center, despite all the fancy rhetoric about its indirect contributions to sales and profits. The task as seen from this perspective is simple: You're sent to the logistics store with a shopping list and so much to spend. The more change you bring back after all the items are bought, the better you've done.

Efficiency – "In our distribution setup, effectiveness in moving most efficiently from point to point is the best measure," says Mike Shumway of Des Moines, Iowa. He, like many other respondents, feels that today's logistics imperative is to "be able to ship from inventory at the closest point to the sale." If this is done, it is felt that several financial benefits will materialize, both by reducing negative impacts like "above-standard costs on 'emergency reaction shipments,' " and by creating or solidifying positive customer relationships.

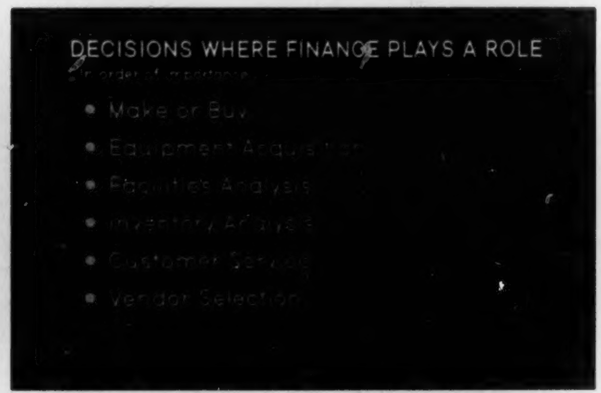
Improved Quality/Service – "Service, service, service," is where measures should be focused, says shipper Kenneth P. Flaherty of Healdsburg, Calif. In the end, he says, "Saving money to lose time and product costs both cash and reputation. It just isn't worth the risks to save a few dollars." M. Morrice of Oakland, Calif., agrees. "The success of logistics should be measured on its participation in obtaining new business, as well as enhancing the service relationship," says Morrice. "Traditional financial measures are internally focused only."

Performance Against Requirements – "Measure against a budget," counsels William L. Seidel of Garrett, Ind., one of many respondents from the "here are your marching orders, now do as you're told" school of performance measurement. This type of measure, however, does not have to be overly rigid, Seidel notes. "The budget would have to be adjusted to reflect variance from volume forecast (both total volume and size of shipment)," he says, "and for required variance from the service standard on which it was based."

Tradeoffs – Logisticians have now come up with

continued

enough ratios to start their own "Rotisserie League" of financial performance. David Fyock of Phoenix likes to balance "total transportation charges (inbound/outbound) in relationship to cost of goods, to provide a true picture of placing goods before the customer." Meanwhile, Bruce M. Hartley of Swiftwater, Pa., looks at "return on assets managed," and Greg McCauley of Hanover, Pa., looks at "cost versus benefit to company." Traditional measures, such as transportation as a percent of sales, cost per hundredweight and cost per unit sold, also still have their proponents. Richard T. Foley Jr. of Lawrenceville, N.J., gets even more precise with this last approach. "We base our freight costs to meet marketing's set goal of $1 per unit sold," he reports. "In this manner, we have a shipment-to-shipment log and everything under $1 per unit turns from cost to profit."

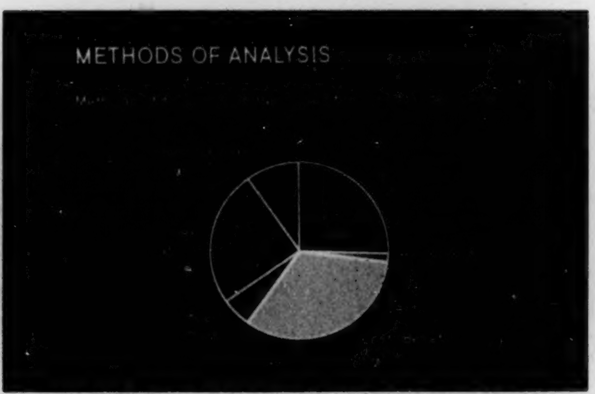


DECISIONS WHERE FINANCE PLAYS A ROLE

In order of importance

- Make or Buy
- Equipment Acquisition
- Facilities Analysis
- Inventory Analysis
- Customer Service
- Vendor Selection

In a tightly bunched field, respondents indicated that they have the greatest involvement in decisions that revolve around the need to "make" (provide) or "buy" (contract for) logistics-oriented services. Equipment acquisition, facilities analysis and inventory analysis were close behind as areas where logisticians have significant influence. Somewhat surprisingly, customer service and vendor selection fell to the bottom of the list.



On an individual decision basis, ratios and tradeoffs apparently get more emphasis than they are given when grading the function as a whole. Cost/benefit analyses are given the greatest weight (32 percent) for individual decisions, and internal rates of return (24 percent) rank closely with the most direct measure: simple payback (26 percent).

Paybacks – This is a new hot button, but it can be triggered by different things for different people and companies. For some, such as B. L. Kaltenbaugh of Atlanta, payback refers to actual revenues recovered for logistics services that are performed. For others, such as Robert C. Taylor of Kansas City, Mo., payback is related to customer satisfaction and measurable repeat business. For still others, however, payback is less well defined and gets into a "warm fuzzy" area in which you just somehow know that logistics makes good things happen.

Value-Added – F. V. Bonilla of Compton, Calif., and Timothy Saul of Verona, Miss., are just two of many respondents who feel that the whole business of financial performance in logistics can be summed up by this hyphenated pairing. Though be careful here too. Value-added is another current buzz phrase that can either be used quantifiably where logistics is concerned, or be applied in a vague, "we just know it's good for us" context.

Financial Results – To Dennis Webber of West Jordan, Utah, A. Long of San Jose, Calif., and many other shippers, financial performance comes in only one pure form: the bottom line. For these respondents, logisticians have to stand up to the same black or red yardstick as everyone else in the firm, and can't choose to hide behind specialized measures that only serve to divert their attention from the ultimate objective – profitability.

Multiple Measures

Many respondents did not choose to be dropped into one of these slots, and instead advocated a combination approach. Dennis Patrick of Seattle says, "So many different aspects affect costs. I think you must have several measures. You must measure service and cost. You must consider sales and measures. And temptation must be trended and compared as a percent sales trend, percent margin trend and a percent cost per unit. No single method adequately considers the value of speed on profit. It's a very difficult task." Harold A. Richardson of Endicott, N.Y., says you must "take into account not only cost for the service, but time as to when shipments are delivered." Most acknowledged that financial performance, like art appreciation, must in the end involve at least some degree of subjective, ongoing assessment.

With this in mind, Stephen W. Waterson of Yardley, Pa., suggests that the best approach is to "appoint an officer in the company to continually look for better costs and finances without substituting service, while observing expenditures on present logistics performance." Such an approach, it is felt, comes closest to recognizing that logistics produces positive financial fallout in many forms. What is ultimately important, most feel, is that an effort is being made to hold logistics up to some sort of standard, and to subject it to some degree of criticism. Only in that way will the true logistics masters emerge. ■

C2150-1

CHILTON'S
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MARCH 1990

TURBO LOGISTICS:
Time-based competitiveness

CONCEPT
SOURCING
MANUFACTURE
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Susan Garner
Congressional Inf Servic
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Critical issues in freight payment

The consummate product launch

MARCH 1990

CHILTON'S
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THE TRANSPORTATION & BUSINESS LOGISTICS MAGAZINE

VOL. 89, NO. 3

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28 TURBO LOGISTICS

Time-based competition. Total cycle time reduction. Managing for speed. Whatever the buzz-phrase, Turbo Logistics means achieving a level of responsiveness that most companies attain only during times of peak demand – when the whips are cracking and the fires rage out of control. It's about exchanging the comfort curve for the comfort of response.

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The warp speed with which McNeil Consumer Products dispatched initial shipments of its new drug gives new meaning to the term "product launch."

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Handling the distribution of specialty chemicals is labor and information-intensive. Here's how one company shares the load with its distributors.

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Third-party freight payment vendors are using information as a lever to turn simple freight bill auditing and payment into turnkey freight management.

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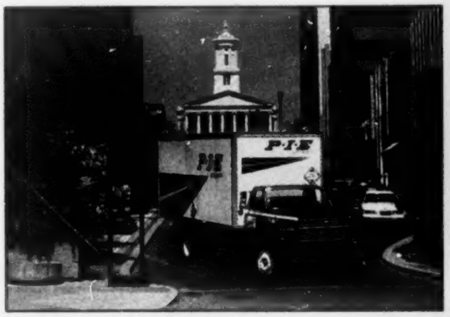
LOGISTICS TRENDS

Need a P.O.D.? Get it automatically from P-I-E

Shippers that require Proofs of Delivery can now get them automatically from P-I-E Nationwide. Customers who want a copy of the delivery receipt can request it at the time the shipment is picked up. Once the freight bills are received at P-I-E's headquarters in Jacksonville, Fla., (usually about seven days), a "key word" on the document indicates that a P.O.D. is to be sent. P-I-E's mainframe then tracks the request and signals the image department to send the P.O.D., by mail or fax, when the documents are microfilmed.

P-I-E's Senior Vice President of Sales and Marketing, William Tickle, says turnaround on P.O.D. requests is 24 hours or less. "This should virtually eliminate any error in providing proof to customers that request it," he says. On the horizon, Tickle adds, is a completely electronic system whereby P-I-E would send a copy of the delivery receipt to the customer electronically, eliminating the need for any human handling in the process.



Automatic P.O.D.'s?

Study reveals changes in the intermodal market

Quite a few changes are taking place in how railroads, motor carriers and steamship lines are interacting to move freight throughout the U.S, as noted in a recent study by Trailer Train Company. The Intermodal Market Survey takes a comprehensive look at the intermodal marketplace and its competitive position with truckload motor carriers. It examines the market share of intermodal, how it is used by major customer groups, shippers and shippers' agents, and the classes of trucking operations. It also looks at how this is shaping intermodal equipment requirements as provided by Trailer Train.

Some highlights of the survey include a significant growth in container traffic by the railroads. About half of all intermodal movements involve containers, including double-stack. Also, international container traffic arriving in West Coast ports is now generally loaded directly onto trains for movement inland – instead of transloading for truckload movements across the U.S. Trucking companies are also joining railways to use intermodal trailers.

For more information on the study, contact Trailer Train at 312-984-3888.

An agreement on service

There are numerous studies that suggest managers and their employees don't agree on most issues related to the workplace. However, the one subject they do agree on is service. According to a survey conducted by Performance Research Associates, a service and management consulting organization, in conjunction with Questar Data Systems, managers and employees show astonishing similarities when asked about such things as their customer's rating of the company's service quality.

A new database, Service Management Practices Inventory (SMPI)™, the first to be developed from the correlation between high-quality service and corporate profitability, is currently marketed by the organizations.

To find the results, managers and employees were asked to choose from a list of 16 alternatives that prevent their organization from delivering excellent service to its customers. Surprisingly, approximately half of all respondents picked the same two factors over all the others: inadequate communication between departments and inadequate rewards for employees. Additional items on the list included:

- Understaffing
- Inadequate computer systems
- Lack of support from other parts of the company

According to Ron Zemke, president of Performance Research Associates, the consistent similarities are good news for the growing number of U.S. companies that have made enhanced service quality a top priority.

For more information on the contents of the survey or further results, contact Performance Research Associates at 612-338-8523 or Questar Data Systems at 612-688-0089.

BARRIERS TO SERVICE/FREQUENCY

	Percentage of	
	Managers	**Frontline**
Inadequate comm. between departments	56%	48%
Employees not adequately rewarded	51%	49%
Understaffing	45%	42%
Inadequate computer systems	45%	39%
Lack of support from other parts of the co.	41%	32%
Inadequate training in people skills	36%	26%
Low morale/no team spirit	31%	35%
Organizational policies/procedures	30%	24%
Inadequate product knowledge	28%	24%

Source: Service Management Practices Inventory (SMPI)™ Database

C2150-1

CHILTON'S
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THE INFRASTRUCTURE COLLAPSE

The true cost of a private fleet

Ryder focuses on logistics

Assessing risk in capital projects

APRIL 1990

CHILTON'S
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VOL. 89, NO. 4

COVER STORY

34 THE ROAD TO RECOVERY

For most Americans, "infrastructure" was always just another $10 Washington word that had little meaning. Then bridges and roads started to collapse. People were killed. Now infrastructure is linked directly to public safety and national economic vitality. The situation borders on the disastrous. Why is so little being done to address it?

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46 HOW TO DO A PRIVATE FLEET ANALYSIS

The days are gone when transportation managers can justify private fleets by sleight of hand. Today, top management wants to see real operational improvements based on objective analyses.

54 THIRD PARTIES: AGENTS OF CHANGE

Highly focused companies like Ryder System see nothing but opportunity in the upheaval that characterizes today's distribution environment.

66 CASEBOOK: COMPUTERIZING LOGISTICS

74 LOGISTICS TOOLS: HOW TO PERFORM A RISK ANALYSIS

The people who hold the purse strings want more than a target ROI for your project. Here's how to accurately gauge whether you have a winner or loser.

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EDI: What level is right for you?

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TRANSPORTATION REPORT

Trucking

THE DAY OF RECKONING IS AT HAND FOR MOTOR CARRIER RATE BUREAUS

Lots of questions

The days of having it both ways may soon end for the nation's motor carrier rate bureaus and their carrier members. For several years, shipper groups have protested in vain the amazing coincidental relationship between independent actions taken by carrier members and general rate increases either allowed or rejected by the Interstate Commerce Commission. Those protests fell victim to the ideological split that highlighted the reign of Heather Gradison as ICC chairman. Shipper protests of the discounting rage and its relationship to rate increases also fell by the wayside.

However, times are changing under the reconstituted Commission. The arrival of Commissioners Karen B. Phillips, Ed Emmett, and Chairman Edward J. Philbin portends a more reasonable forum for the shipper and carrier masses and less clout for the megapowers, as evidenced by recent developments concerning rate bureau activities.

The issues to be considered include the following: Do independent rate actions and subsequent discounting off of those rates defeat the purpose of ICC regulation? What is the relationship between carrier revenue needs and carrier discounting activities? Does the discounting activity lead to differential pricing that is inherently discriminatory? Why is the agency fiddling with a 4 percent general rate increase (GRI) when carriers routinely offer discounts in excess of 40 percent to favored (read big) shippers? Does the process of "flagging out" of GRIs while submitting independent rate actions identical to the GRI request circumvent federal regulatory review?

These are a few of the questions to be considered in the upcoming investigation, and they should provide fertile ground for lively discussion between the power-hitter members of the carrier and shipper community *vis a vis* their more modest counterparts that generally have been on the short end of the discounting stick.

The thrust of the Justice Department's petition is that bureau member activity in simultaneously filing GRIs and nearly identical independent rate actions constitutes an abuse of the antitrust immunity bestowed on the bureau. According to the Justice Department, there is clear evidence of improper activity by the bureau and its carrier members.

DRUG USE IS DOWN, BUT THE NUMBER OF USERS REMAINS UNACCEPTABLY HIGH

The average truck driver feels that one in every four of his/her fellow drivers operates under the influence of illegal drugs. This was the average uncovered in a recent survey conducted by the Regular Common Carrier Conference (RCCC).

When drivers were asked to give an estimate on how many of their fellow truck drivers regularly use illegal drugs, the percentage—although it did decline slightly—was higher than expected. Last year this same survey showed that 29 percent felt their fellow drivers used illegal drugs. This year, the number decreased to 26 percent.

Drivers were also asked about their experience regarding the five different types of drug testing: post-accident, pre-employment, DOT physical exam, "reasonable suspicion" and random. Drivers were asked if they had taken any of those tests during the past 12 months and if they approved or disapproved of them. The study shows that 90 percent of drivers approve of post-accident testing. Last year, 6 percent of the drivers were tested this way. Pre-employment testing and DOT physical exams are currently the most common tests. Drivers had an approval rating of 84 percent for pre-employment testing, while 89 percent said they approved of the Department of Transportation's testing in connection with physical exams. Tests given because of "reasonable suspicion" had an approval rating of 76 percent. Only 68 percent of drivers gave their approval for random testing, the most controversial type. In the past year, only 8 percent of the drivers were tested in this manner.

DRUG TEST INCIDENCE
AND DEGREE OF DRIVER APPROVAL
(PERCENT OF DRIVERS)

Test Type	Tested in Last Year	Test Approval
Pre-employment	46	84
Post-accident	6	90
US DOT physical exam	68	89
"Reasonable suspicion"	6	76
Random (nonscheduled)	8	68

Few take the test

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MAY 1990

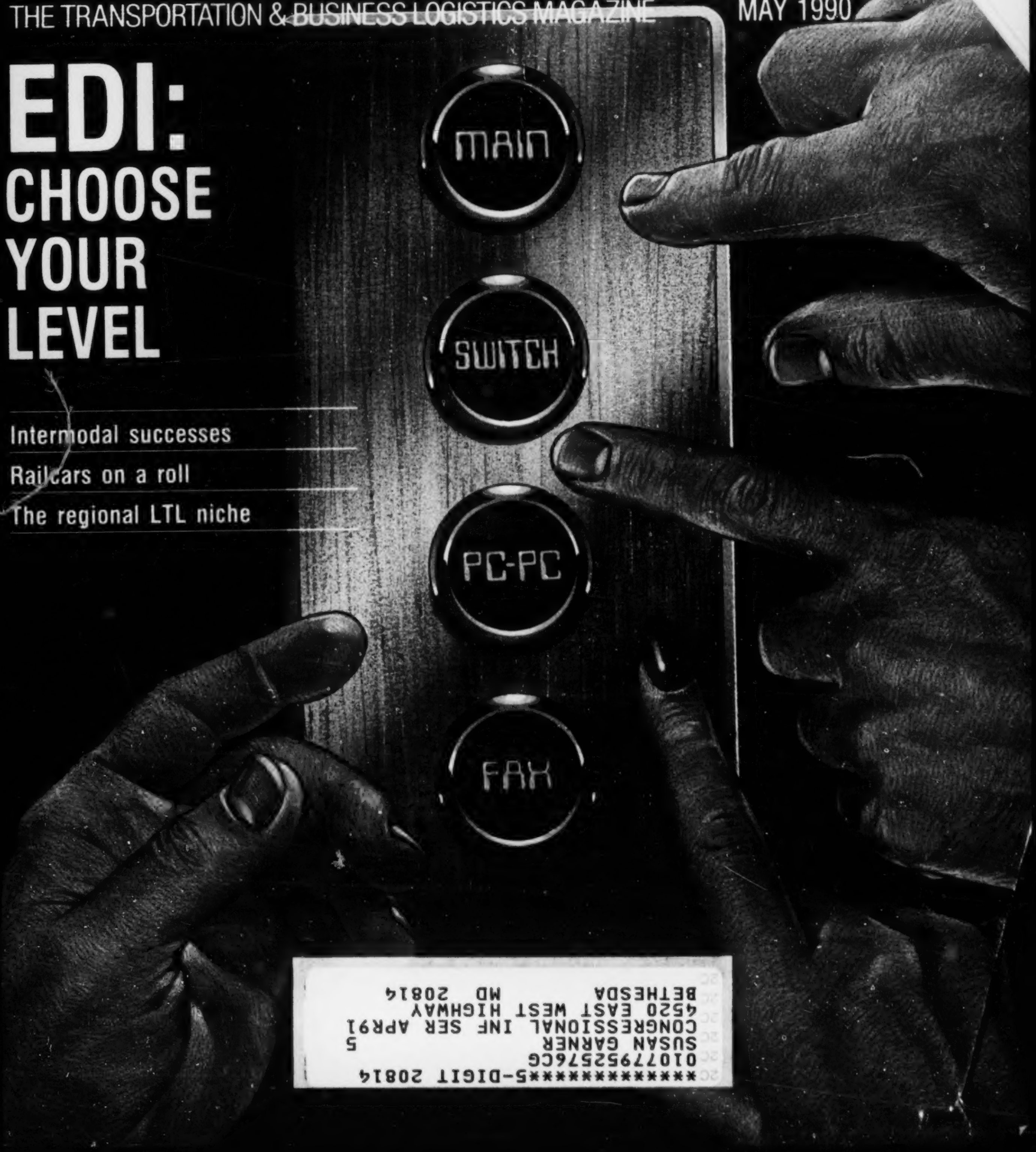
Warehousing Report
Total equipment costs

EDI: CHOOSE YOUR LEVEL

Intermodal successes

Railcars on a roll

The regional LTL niche



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While many companies are using some form of Electronic Data Interchange (EDI) to facilitate business transactions, the *truth* is that most of these companies are at the very beginning stages of application. Here's an overview of the three main levels of EDI and an update on standards issues to help you decide whether EDI is right for your business.

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BULGING IN THE MIDDLE

Readers report that reliance on traditional third-party import/export vendors remains strong, at the same time that a new breed of intermediary is expanding the range of global logistics services.

By Joseph V. Barks, Contributing Editor

With middlemen, all you need is to find a reliable source to give you the service you need. I find there are plenty to choose from."

With that comment, David J. Simms sums up the current mood of shippers and receivers about the choices they have as they look for vendors that can help them maneuver through the tricky logistical passageways of international commerce.

Simms and hundreds of other respondents to our recent "Dialogue" survey on the services provided by international middlemen made it clear that third parties have taken on an increasingly critical role as the move to establish truly global business operations has intensified. Traditional vendors such as customs brokers and air and ocean freight forwarders are being relied on more than ever, and not just for mundane functions such as documentation or routing. Rather, these third parties are being looked to as strategic partners in the quest to use logistics as a competitive wedge in the fierce international business arena.

At the same time, the responses showed that many new entrants—spun off from the ranks of trucking, air, steamship and rail carriers—have emerged as equally viable suppliers of middlemen services. In fact, the results indicate that these newcomers may actually be doing a better job of responding to the expanding needs of international shippers and receivers.

continued

TYPES OF MIDDLEMEN USED FOR EXPORTING
(More than one answer could be given)

Air freight forwarder	78.2%
Ocean freight forwarder	63.7
NVOCC	40.0
Foreign warehousers	6.4
Export management service/consultant	5.4
FTZ operator	4.5
U.S.-based contract logistics vendor	0.9
Other	3.6
No middlemen used	9.1

Urgency still seems to be the order of the day for export shipments, leading to extensive use of airfreight forwarders as middlemen. Containerized freight, breakbulk and bulk shipments, however, aren't far behind, as the high percentage for ocean freight forwarders attests. Both air and ocean forwarders appear to be offering enough specialized, value-added services to relegate the traditional intermediary, the NVOCC, to a third-place showing. As smaller shippers get involved in international the role of NVOs will no doubt increase. The poor showing for the contract logistics vendor may be an indication that this type of service is still new to exporters.

TYPES OF MIDDLEMEN USED FOR IMPORTING
(More than one answer could be given)

Customs broker	81.4%
Airfreight forwarder	46.0
Foreign consolidator/NVOCC	31.9
U.S. public warehousers	9.7
Foreign warehousers	2.6
U.S.-based contract logistics vendor	2.6
FTZ operator	2.6
Import management service/consultant	1.8
Other	5.3
No middlemen used	10.7

The good 'ol customs broker still retains a lion's share of the importing side of the middlemen business—no doubt because of intensifying perceptions of the U.S. Customs Service as an adversarial, red tape-wrapping roadblock that only experienced specialists know how to avoid. Airfreight services and foreign consolidators also are viewed as important middlemen for U.S. importers, apparently to maximize speed and economy. At the same time, however, it was somewhat surprising to see a larger percentage of importers reporting that they do not use middlemen than was reported in the previous question about exporting.

It all combines to provide well-stocked shelves for international logisticians who need expert help as they arrange for global sourcing or distribution.

You'd Better Shop Around

But careful shopping is still recommended, as Elaine Rea of Hillsboro, Okla., notes. "All the services we need are being performed," she says, "but it is not one-stop shopping. The integrated carriers lack the flexibility and expertise provided by the forwarders. And the forwarders don't fly their own planes, so lift is sometimes harder to get."

Comments about what specifically is still needed from international middlemen are presented on page 82. In these three pages we also present the tabulations from our mini-survey, indicating readers' current levels of use – and satisfaction – with both traditional and "new breed" third-party providers.

Armed with this information, other international shippers or receivers may be alerted to new possibilities in the third-party environment that could offer an improvement over their current operating approaches. At the same time, the results should help the third parties themselves focus on the areas where they need to expand and improve, so their services can be of maximum appeal and value to both new and established users. ■

GRADING THE TRADITIONAL MIDDLEMEN
("Grade Point Averages" computed on following basis: A=4.0; B=3.0; C=2.0; D=1.0; F=0.0)

Customs broker	3.21
Airfreight forwarder	3.11
Ocean freight forwarder	2.94
Foreign consolidator/NVOCC	2.57
U.S. public warehousers	1.93
FTZ operator	1.50
Export management service/consultant	1.37
Foreign warehouser	1.30
Import management service/consultant	0.91
U.S.-based contract logistics vendor	0.90

The venerable customs broker and the upstart airfreight forwarder go to the head of the class, based on the marks handed out by our tough-grading readers. Ocean freight forwarders and consolidators/NVOCCs earn a respectable "B" rating, but after that the ranks of international shipping "scholars" are thin. Import/Export consultants in particular seem to be in need of some remedial training to give their services more "real world" value.

USE OF "NEW AGE" MIDDLEMEN
(More than one answer could be given)

Trucking company	51.5%
Integrated air carrier	46.5
Steamship affiliate	42.6
Intermodal operator (railroad affiliate or independent)	29.7
Warehouser	11.9
Other	4.0

The concept of using trucking companies first began to take hold a half decade ago, but now it's an option our surveyed readers say they're using. Other third-party services such as intermodal have grown out of other direct carriers and they are also getting significant use.

GRADING THE "NEW AGE" MIDDLEMEN
("Grade Point Averages" computed on following basis: A=4.0; B=3.0; C=2.0; D=1.0; F=0.0)

Integrated air carrier	3.02
Trucking company	2.92
Steamship affiliate	2.84
Intermodal operator (railroad affiliate or independent)	2.63
Warehouser	2.28

The trucking companies may be getting used most frequently among "new age" third-party alternatives (see Question 6), but the integrated air carriers are getting the highest marks. From top to bottom, however, this report card is far better than the one that readers handed out to traditional middlemen (Question 3). Clearly, some formidable new competition has arrived on the international logistics scene – a development that can only bode well for importers and exporters who know how to use the competitive maneuvering to their advantage.

TOP THREE THINGS THAT SHIPPERS LOOK FOR WHEN SELECTING AN INTERNATIONAL MIDDLEMAN
(1.0 is highest rating)

Relative size compared with competitors	1.62
Low cost	1.93
Financial strength	2.04
Recommendations from other shippers	2.17
Reputation in marketplace	2.36
Proven value	2.37

Big seems to be better when our readers look for partners who can help them navigate international trade routes. The cost element is also important. Still, it has to have the right financial muscle for getting the job done on a global basis. Shippers put great stock in financial strength and the opinions of their colleagues.

SHIPPER PERCEPTIONS OF MIDDLEMEN

	True	False
Middlemen generally provide excellent value and service, and without them our international activity would be impossible	55.9%	44.1%
Middlemen are a necessary evil we use to save time and money we don't want to spend on documentation, regulations, rates, routings, etc.	49.5	50.5
The fees and charges of most middlemen add considerably to the cost of international movement without adding much value	29.6	70.4
We have a hard time finding middlemen who really know how to do the job right. Most are unreliable and really don't know their business	29.2	70.8
The days of international middlemen are fast coming to an end. Their services will be provided by large U.S. or foreign carriers	28.7	71.3

Our readers make it clear that middlemen still have an important role in international logistics, and it's not simply one that's designed to take on the mundane tasks that go with the territory. Moreover, exporters and importers expect to be using middlemen for some time to come, despite the increase of huge, one-stop transportation companies. However, half of the respondents felt they were not receiving full value for the money paid to middlemen, and nearly a third believe many middlemen do as little as possible—and do it badly.

WHERE INTERNATIONAL MIDDLEMEN NEED TO IMPROVE

"Better communications, relative to daily or weekly updates on current sailings and future advice on rule changes, new services, customs, etc."—**Lloyd F. Hawes, Germantown, WI**

"Export boxing."—**W. Nadey, Chicago**

"Customer service activities—tracing/tracking. Door-to-door, one-stop, one-bill shipping."—**James E. Coonan, Chicago**

"With large freight forwarders and customs brokers, we need the same consistently good service in all the cities where they have offices, not just two or three good offices."—**V.G. Guinto, Orlando, FL**

"I have trouble getting the foreign shippers to forward the proper documents to the designated customs broker. Then I have to spend a lot of time tracking down the documents and getting them to the broker for clearance."—**Jack Sims, Rocklin, CA**

"Carriers coordinating from point of origin to their air facility/terminal."—**F.R. Zeitlhofer, Kanata, ONT, Canada**

"A faster method of determining shipping costs for our foreign dealers. This is sometimes hard to do quickly."—**Warren Miller, Baltimore, MD**

"Quick rate quotations on ocean carriers."—**E.W. Anderson, Chicago**

"Expanded use and application of FTZs. America is light years behind the times. Personnel stability is another area. The Europeans have the staying power. However, in the same vein, tradition prevents the Europeans from being innovative—looking at new and innovative ways. That's what forwarders and NVOs are supposed to do. It's not a license to 'clip coupons and fees.' That's why the integrated air carriers continue to grow and expand."—**Name withheld**

"As soon as my international agent gets freight I want to know what he has. Fax a packing list or commercial invoice details. I want ETAs to port cities and routings to my plants."—**Marven Mohr, Minneapolis**

"Customs clearance, quickly and at reasonable cost."—**Dan Suarez, Chantilly, VA**

"Quick and accurate information on all costs to destinations other than major cities. There are a lot of markets that are not major ports in capital cities."—**John C. Kooser, Cleveland**

"Help for small companies that are just beginning to export on a large basis. A lot of terms are hard to understand."—**T. Grandey, McMinnville, TN**

"Assurance of loss prevention during Customs inspection."—**S.A. Tillotson, Elk Grove Village, IL**

"Reliable foreign consolidation service. Some ocean carriers perform this service very well in the Far East. They are shut out in the North Atlantic, South Atlantic, and Mediterranean."—**M.D. Garantte, Villa Park, IL**

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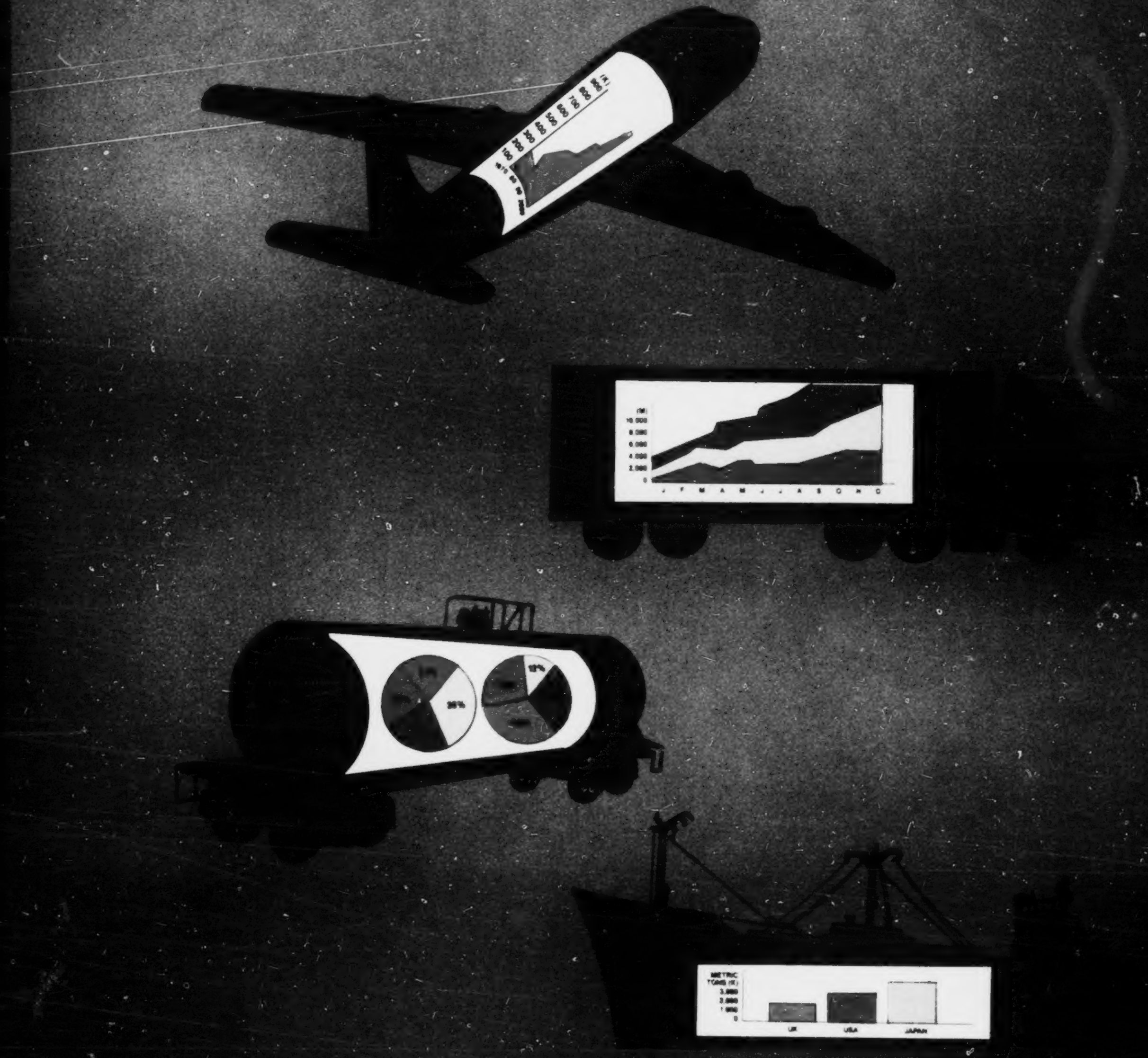
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PART I, JULY 1990

VOL. 89, NO. 7

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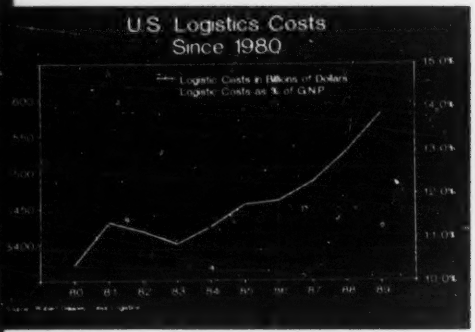


Logistics costs as a percent of GNP are beginning to rise.

Logistics needs a 'kick start'

U.S. consumers have enjoyed $65 billion in savings as a result of deregulation and better inventory management. But efficiency has stalled.

By Thomas A. Foster, Editorial Director

In 1989, the U.S. spent $581 billion on logistics. That amounts to 11.1 percent of the nation's entire gross national product (GNP).

"To put these expenditures in perspective, that is 10 times greater than all expenditures for advertising, twice the the annual cost for national defense and equal to what is spent on health care," says Robert V. Delaney, one of the nation's leading logistics experts, and now vice president of Cass Logistics in St. Louis.

For most business people, such numbers are hard to comprehend. Even within their own businesses, few managers understand the scope of logistics and its impact on costs, profits and competitiveness.

In the public utility industry, for instance, Delaney claims logistics accounts for 8 percent of revenue. In the communications business, logistics costs amount to 10 percent of sales revenues. But understanding the cost of logistics is just the first step in understanding the challenge facing our industry.

"Johnson & Johnson has determined that inefficient logistics operations account for 15 percent of the cost of hospital care," says Delaney, "so the real questions are: How efficient are we and what can be done to improve our competitiveness?"

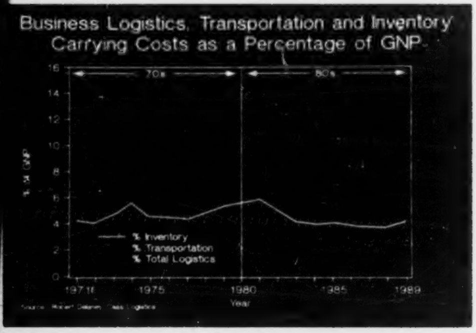
To answer these crucial questions, Delaney recently completed a study of the logistics industry on behalf of Cass Logistics, Inc., which manages logistics information, handles freight payments and provides software ser-

continued

U.S. LOGISTICS COSTS
($ Billion Except GNP)

Year	GNP $ Trillion	Value of Inventory	Inventory Carrying Rate	Inventory Carrying Costs	Transportation Costs	Administrative Costs	Total U.S. Logistics Cost	Logistics % of GNP
1976	1.72	319	.250	80	133	9	222	12.9
1977	1.92	351	.250	88	150	10	248	12.9
1978	2.16	397	.270	107	175	12	294	13.6
1979	2.42	444	.300	133	193	14	340	14.1
1980	2.63	483	.317	153	205	15	373	14.2
1981	2.94	520	.343	178	236	17	431	14.7
1982	3.07	520	.309	161	240	17	418	13.6
1983	3.31	510	.279	142	244	15	401	12.1
1984	3.78	546	.291	159	250	16	425	11.2
1985	4.00	645	.268	173	265	18	456	11.4
1986	4.24	657	.261	172	271	18	461	10.9
1987	4.53	683	.263	180	288	19	487	10.8
1988	4.87	735	.267	196	313	20	529	10.9
1989	5.23	780	.292	228	331	22	581	11.1

Source: Robert Delaney, Cass Logistics



Business logistics costs are primarily made up of transportation and inventory carrying costs.

vices for 700 of the nation's largest companies.

The first part of Delaney's study looks at the costs associated with U.S. business logistics. "We start with inventory because investment, condition, location and maintenance of inventory is what the logistics function manages," says Delaney.

According to Delaney, the annualized current cost of inventory required to support manufacturing and trade in 1989 was $780 billion. Interest on that investment based on commercial rates cost about $72 billion. Taxes, obsolescence and depreciation accounted for $96 billion. The cost of public warehousing and for-hire storage is $7 billion. That includes the cost of dry, temperature controlled and refrigerated storage, household goods and special products, agricultural commodities and bulk petrochemical storage. Based on an Ohio State University report, Delaney estimates the cost of private warehousing to be $53 billion.

The second key component of logistics cost is transportation, according to Delaney. "The engine that drives the efficiency of business logistics is the trucking industry," he says. "Trucking costs are eight times greater than rail and more than three times greater than all other transportation modes combined."

The largest element of the trucking industry is private fleets. In the for-hire sector, truckload (TL) carriers come in second and LTL carriers are third in importance.

Delaney says the relative importance of rail service has not really grown, despite deregulation and the increased emphasis on intermodal. "Rail revenues have not grown throughout the decade of the 1980s," says Delaney. "The current $30 billion of rail revenue includes $6 billion of intermodal transportation."

The administrative cost added to the logistics bill by shippers is only 5 percent of the total amount of $581 billion, says Delaney, who compliments shippers, carriers and other vendors involved in logistics for bringing costs down in recent years.

"The average cost of total logistics over the 1970s was 13.7 percent of

continued

COMPONENTS OF 1989 LOGISTICS COST

		$ Billions
Inventory Carrying Costs		
Interest		72
Taxes, Obsolescence, Depreciation		96
Warehousing		60
	Subtotal	228
Transportation Costs		
Motor Carriers		
Public and For Hire		72
Private and For Own Account		84
Local Freight Services		100
	Subtotal	256
Other Carriers		
Railroads		30
Water Carriers		21
Oil Pipelines		9
Air Carriers		11
	Subtotal	71
Shipper Related Costs		4
Distribution Administration		22
	TOTAL LOGISTICS COST	$581

Source: Robert Delaney, Cass Logistics

GNP," says Delaney. "Transportation costs alone averaged 8.1 percent of GNP during the 70s. Surprisingly, the most inefficient year for business logistics was 1981 when costs were 14.7 precent of GNP. In 1981 we started a serious recession, and manufacturers and distributors came into it with excessive inventories that had to be financed at rates above the commercial paper interest rate of 14.3 percent. Shippers were also slow to respond to transportation deregulation."

But the logistics industry learned quickly about how to use deregulation to its advantage, says Delaney. "The most efficient year in business logistics was 1987, just six years after our worst performance. Inventory investment hit a record low, interest rates were down and competitive transportation combined to produce a total cost of 10.8 percent of GNP."

The result of the improved performance in the logistics industry since 1981 has been a savings of $65 billion, according to Delaney. These savings went directly to the nation's consumers in the form of dramatically reduced inflation during the Reagan years.

"We began in the 1980s with double digit inflation in producer prices for finished goods," says Delaney. "Between 1982 and 1987, producer prices increased at only a 3 percent annual rate of inflation. Those were the same years that dramatic year over year improvement occurred in our logistics efficiency. Manufacturing operating rates stayed constant at 80 percent of capacity. Import competition may have helped to moderate prices, but the $65 billion in logistics savings was the key contributor to lower prices for producers and consumers."

Going back to the early 1970s, Delaney says our inventory problems began with wage and price controls instituted to deal with the Arab oil boycott. These controls created a perception of material shortages, and hoarding boosted inventory levels. We entered the recession in 1974, which kept levels high. In fact, it took two years to work excessive inventory out of the system. But then, inventory investment steadily increased between 1977 and 1980. We were in an economic expansion, but inventories were increasing. "According to the textbooks that is not supposed to happen," says Delaney, "but it did.

"The problem was not economic, it was operational," he says. "Transportation service was so poor and delivery so unreliable, logistics managers positioned more inventory in more markets to respond to customer service complaints."

After shippers learned how to take advantage of the partial deregulation brought on by the Motor Carrier Act and the Staggers Act, the nation enjoyed steep reductions in inventory, transportation and logistics costs. Between 1982 and 1987, total logistics cost declined by 22 percent. Thus U.S. manufacturers, distributors and consumers saved $65 billion between 1982 and 1987.

The trends of logistics costs are documented by the patterns of inventory to sales ratios, especially when you look at the years following deregulation.

"We were in a recession in 1981 and 1982, but the nominal ratio of inventory to final sales declined," explains Delaney. "Again, economists tell us that inventories increase in a recession because of declining sales, but in 1981 and '82 logistics managers were reducing inventories faster than sales were declining. This ratio declined every year between 1982 and 1987. It was the first time such an event occurred in our history.

The reason the inventory to sales ratio had been so high for so long was the fudge factor shippers had to build into their distribution planning, notes Delaney.

"During the '70s, variability in transit time accounted for 40 percent of the lead time required in inventory replenishment strategies," says Delaney, who worked for major food and chemical shippers in those years. "By 1985, the variability of transit time was gone. Trucks were crossing the country in three days. Manufacturers and distributors now know exactly what the transit time will be, and it is a fraction of the

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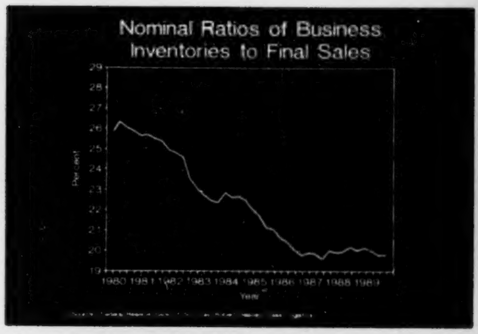
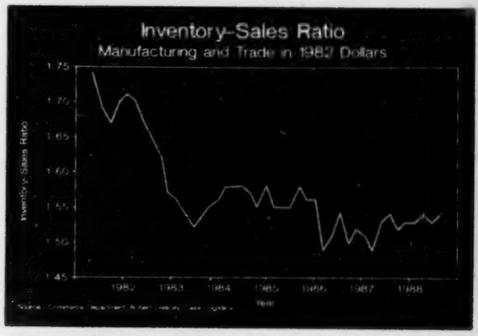


Inventories have dropped by $200 billion since deregulation because transit times are more reliable.



Even allowing for inflation, there has been a 22% improvement in inventory efficiency since 1981.

"In order to improve our world competiveness, we can reduce U.S. Logistics costs to below 10 percent of GNP and keep it there."

	1989	Goal
Transportation	6.3	5.8
Inventory	4.4	3.8
Administration	.4	.3
TOTAL	11.1	9.9

1989 REVENUES OF PUBLIC MOTOR CARRIERS

Market Segment	$ Billions
Truckload – General Commodity	$24
Less Than Truckload	18
Parcel Delivery Services	11
Bulk Commodity Carriage	5
Household Good	5
Motor Vehicle Haulers	3
Refrigerated Transport	3
Building Materials	2
Heavy Machinery Haulers	1
TOTAL	$72

Source: Robert Delaney, Cass Logistics

"The industry made great strides since 1981, but we have been resting on our laurels for the past year or two."

time that was previously required," he says.

According to Delaney, looking at the declining slope of the inventory to sales ratio curve means that we currently have $200 billion less inventory investment in the U.S. business logistics system relative to final sales than we did in 1980. He points out that his findings are unchanged by adjusting for inflation.

This $200 billion reduction in inventory is a key element in the $65 billion logistics savings Delaney has calculated. He says by applying the minimum carrying rate of 15 percent, the reduction of $200 billion in inventory investment translates to a $30 billion savings in inventory related costs.

The remaining $35 billion in savings comes from transportation, which Delaney defines as "the application of motion to inventory."

Looking first at rail, Delaney says during the 1970s rail revenue per ton mile was 4.2 cents. At that time the rail industry had a mere 2 percent return on investment. After deregulation, rail revenue per ton mile declined to 2.6 cents, but the railroad industry return on investment increased to 7 percent.

"A one-third reduction in revenue led to a three-fold increase in return on investment for the carriers," says Delaney. "The ICC reports that rate compression saved users of rail service $5 billion. That's because rail contracts encouraged by the Staggers Act enabled railroads to bring capacity into line with demand."

The railroads managed to reduce their costs faster than their revenues per ton mile declined, says Delaney; 8,000 locomotives were retired, half a million rail cars were taken out of service and 200,000 employees were furloughed.

"That is a harsh outcome, but the fact is that the industry did not need these personnel or this capital investment," says Delaney. "This overcapacity was hidden by the economic regulation of our railroad industry during the 1970s."

The overcapacity that existed within the trucking industry follows a similar pattern, explains Delaney. Under economic regulation in the 1970s ton miles increased more than three times faster than GNP, indicating how mileage-intensive the trucking industry was during these years. Carriers had to travel many miles because of their limited authorities. No carriers had 48-state authority. Regulation controlled length and direction of haul, gateways of operation, commodities to be transported, locations to be served, the availability of backhaul. Private carriers were unable to serve subsidiaries of the same corporate parent.

"Following partial deregulation in 1980, heavy duty diesel ton miles have grown in direct proportion to GNP," explains Delaney. "That is the relationship that should exist if trucking is operating efficiently."

The Bottom Line

Delaney uses this improved efficiency to calculate the savings transportation deregulation has brought to logistics. He explains that the combined revenues and costs of for-hire and private motor carriers in intercity traffic is $156 billion.

"It is conservative to say that competition drove a 20 percent improvement in trucking productivity," Delaney says. "As mileage-intense, fragmented operations were replaced by efficient operations, that 20 percent improvement has led to a $30 billion savings in the combined cost of for-hire and private motor carriers in intercity service."

Delaney says another way to confirm the combined $35 billion of savings in rail and trucking service is to compare freight transportation outlays to GNP. During the 1970s, freight transportation outlays tracked GNP growth very closely. But transportation increased at a 22 percent slower rate than GNP during the 1980s. Apply that 22 percent decline to the $186 billion of combined intercity rail and truck expenditure and the result is a savings of $35 billion in freight transportation.

Thus the $30 billion saved in reduced inventory costs combined with $35 billion saved through improved transportation efficiency adds up to a total of $65 billion.

"The industry made great strides

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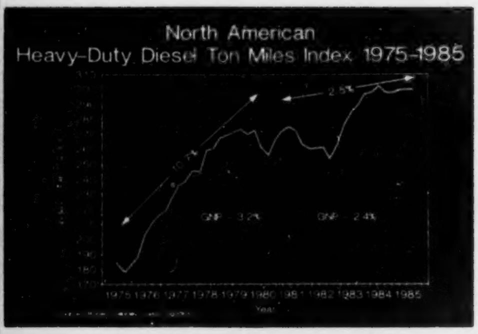


Trucking mileage is now growing at exactly the same rate as GNP.

> *"It is time to consider what we can do to kick start logistics efficiency."*

since 1981, but we have been resting on our laurels for the past year or two," says Delaney. "Business logistics costs have been on a plateau since 1988. We have achieved all of the savings that are available within our existing policy and program. Inflation is gradually building within the business logistics system. If the U.S. is going to improve its global competitiveness, attention must be paid to what new policies and programs will make us more efficient.

"The logistics efficiencies we achieved in the '80s still give us a competitive advantage worldwide, but we are in danger of losing this advantage," says Delaney. "Our competitors in Europe will soon enjoy a boost in logistics efficiency greater than the $65 billion we experienced. The Europe 1992 movement includes deregulation of transportation and major changes to the logistics systems in Europe that will save $78 billion to $98 billion. In a few years, the Europeans will have a competitive logistics advantage unless we do something. It is time to consider what we can do to kick start logistics efficiency."

One path to quickly achieve better logistics efficiency is outsourcing, says Delaney.

"Thinking managers are interested in controlling their bottom line, not investing in assets and managing a large staff," says Delaney. "That is especially true among companies that must lower breakeven cost and pay down an overload of debt. They are prime candidates to leverage off balance sheet assets. Decision makers are becoming more receptive. A whole new generation of women and men are moving up the ladder. They are stimulated by the potential to apply information to lower the cost and improve the service of their business logistics system."

The most important "kick-start" for logistics, however, would be to complete the deregulation of transportation that was only started in 1980. Delaney says 43 states still unnecessarily regulate trucking rates, entry, authorities or other aspects of their carriers' businesses.

Delaney claims transportation in the U.S. is only about two-thirds deregulated. Finishing the job of deregulation would save shippers and consumers billions of dollars and would make the U.S. far more competitive worldwide.

"Unfortunately, public policy is still focused on the welfare of the carriers," says Delaney. "It is loser-driven. If Congress focuses public policy for freight transportation on consumers rather than on suppliers, U.S. manufacturers and distributors would drive their business logistics cost below 10 percent of GNP and keep it there. That is the goal we must strive for."

Delaney hopes Congress gives serious attention to HR 4261 introduced by Congressman Hastert of Illinois, which would open up market entry for transportation carriers and other logistics service businesses. But Delaney is pessimistic that this bill or any other transportation deregulation legislation will get very far in Washington.

Lobbying and political contributions from transportation labor, management and trade associations have effectively blocked any consideration of competitive reform, says Delaney. He identifies the LTL trucking industry as the chief opponent of further transportation deregulation, and he says this group has gained tremendous leverage in Washington.

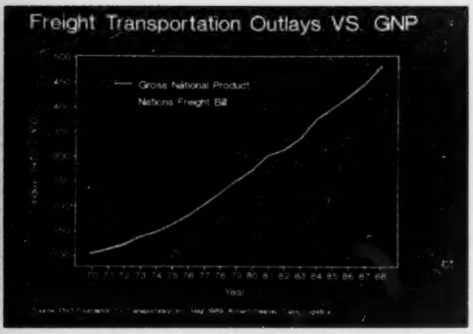
"The total revenues of the LTL trucking industry amount to only 3 percent of total logistics costs," says Delaney. "Allowing three percent of anything to dictate prices, terms and conditions to the rest of us is what Milton Friedman calls the "tyranny of a minority." We need legislation like HR 4261 to drive our business logistics system to greater productivity.

"Logistics managers have to tell their managements that they have achieved all the efficiency they can under the present transportation system," says Delaney. "If logistics managers can inform their CEOs and chairmen about our stagnant situation, there is a chance Congress will bow to the pressure of the general business community rather than to the carrier interests. U.S. business needs more deregulation if logistics efficiency is to improve." ■

Shippers contain transport costs

Have we seen the end of the buyer's market in transportation services? Data on the nation's freight bill suggests the pendulum may indeed be swinging back toward the seller.

By Jay Gordon, Executive Editor



From 1980 to 1989, GNP jumped 92% and the passenger bill increased 76%; the freight bill grew just 53%.

The Decade of the Shipper.

It would be oversimplifying it, but that's what you could call the 1980s. And not too many shippers or carriers would argue the point.

Charting the course of the nation's freight bill from 1980 to 1989, however, may convince you that the 1990s will be the Decade of the Carrier (see chart on page 27).

In 1980 the nation's freight expenditures, expressed as a percentage of our Gross National Product (GNP), was 7.81 percent. In the next five years it dropped by more than a full percentage point; previously, it took a decade—from 1960 to 1970—for the ratio to drop by that much.

Estimates for 1989 place the freight bill at 6.26% of GNP, a decrease of barely half a percent from 1985 levels.

Preliminary estimates for 1989 place the freight bill at 6.26 percent of GNP, a decrease of barely half a percent from 1985 levels. Translation: the rate at which freight costs drop as a percentage of GNP is slowing. Further translation: while shippers have done a good job of reducing transportation costs, the party may be over.

Frank A. Smith, author of *Transportation In America*, a statistical report issued by the Eno Foundation for Transportation, says there's a simple reason for this: Carriers are finally beginning to adjust to deregulation. "There was a lot of serious rate competition immediately after deregulation," Smith says. "Carriers set about controlling their costs. About one-third of the Teamsters lost their jobs. But by and large, the adjustments have been made," he adds. "The surviving carriers have been able to raise rates slightly."

The emphasis here is on *slightly*, and Smith is really referring only to less-than-truckload motor carriers. These carriers, along with some of their airfreight brethren, are the only ones that have been able to consistently raise their rates, albeit by a slim margin. The charts on page 28 show the trend in rate levels for various modes. LTL rates have inched up, while TL rates remain flat. Airfreight rates, counting figures from Federal Express, have more than doubled since then.

Barriers Remain

Robert V. Delaney, vice president of Cass Logistics, Inc., says the notion that deregulation would eventually leave only a few major carriers in each mode, and that these carriers would be able to control pricing was "never a realistic possibility." While there has been a great shakeout of marginal operators, there still is over-capacity in most modes of transportation, Delaney notes.

"Given the present regulatory environment, transportation managers cannot be expected to wring much more savings out of their freight budgets," Delaney says. "The savings have been tremendous: $30 billion in trucking costs and another $5 billion in rail costs since deregulation."

Delaney adds that a "kick start" is needed if shippers are to see further cuts in their transportation budgets. "We have seen only partial dereg-

continued

NATION'S FREIGHT BILL[a]
(Millions of Dollars)

	1980	1981	1982	1983	1984	1985	1986	1987	1988[g]	1989[h]
Highway										
Truck – intercity										
ICC-authorized	43,000	47,100	44,100	46,500	52,100	54,200	58,100	61,000	66,500	71,200
Non-ICC authorized	51,551	49,993	55,840	64,598	68,600	69,000	70,100	73,800	76,700	81,300
Truck – local[b]	60,545	67,799	62,467	70,700	78,700	82,200	84,800	89,600	95,800	101,550
Bus – intercity	235	260	249	246	245	245	226	185	200	200
Totals	155,331	165,152	162,656	182,044	199,645	205,645	213,226	224,585	239,200	254,250
(Index)	(100)	(106)	(105)	(117)	(129)	(133)	(138)	(144)	(155)	
Railroads	27,702	30,502	27,134	27,325	30,549	29,150	27,787	28,259[g]	29,614	29,578
(Index)	(100)	(110)	(98)	(99)	(110)	(105)	(100)	(102)	(107)	
Water										
International[c]	8,279	8,603	8,097	8,545	10,116	10,745	11,545	11,363	12,353	12,312
Coastal/intercoastal	3,155	3,493	3,545	3,705	3,445	3,605	3,486	3,581	3,484	3,503
Inland waterways[d]	2,395	2.652	2,419	2,380	2,603	2,449	2,470	2,467	2,637	2,715
Great Lakes	513	570	335	404	475	461	417	490	574	560
Locks, channels	1,156	1,247	1,204	1,158	1,190	1,189	1,075	1,043	1,134	1,134
Totals	15,498	16,565	15,600	16,192	17,829	18,449	18,993	18,944	20,182	20,224
(Index)	(100)	(107)	(101)	(104)	(115)	(119)	(123)	(122)	(131)	
Oil Pipeline										
Regulated	6,340	6,678	7,140	7,472	7,824	7,570	7,255	7,127	7,166	7,094
Non-regulated	1,430	1,506	1,058	1,520	1,369	1,346	1,382	1,337	1,457	1,443
Totals[g]	7,770	8,184	8,198	8,992	9,193	8,916	8,637	8,464	8,623	8,537
(Index)	(100)	(105)	(105)	(115)	(118)	(113)	(112)	(108)	(110)	
Air										
Domestic[e]	2,802	3,165	3,244	3,785	4,662	5,498	5,926	6,863	7,897	8,450
International	1,211	1,175	1,192	1,174	1,354	1,319	1,633	1,996	2,329	2,748
Totals	4,013	4,340	4,436	4,959	6,016	6,817	7,559	8,859	10,226	11,198
(Index)	(100)	(108)	(111)	(124)	(150)	(170)	(188)	(221)	(255)	
Other Carriers[f]	721	810	693	628	506	378	265	204	180	
(Index)	(100)	(112)	(96)	(86)	(70)	(52)	(37)	(28)	(25)	
Other Shipper Costs										
Load/unload freight cars	1,676	1,754	1,565	1,698	1,929	1,917	1,976	2,100	2,265	2,300
Operation traffic dept's	756	813	865	927	991	1,050	1,107	1,161	1,212	1,300
Totals	2,432	2,567	2,430	2,625	2,920	2,967	3,083	3,261	3,477	3,600
(Index)	(100)	(106)	(100)	(108)	(120)	(122)	(127)	(134)	(143)	
Grand Total[g]	213,467	228,120	221,147	242,765	266,658	272,322[g]	279,550[g]	292,576[g]	311,502	327,497
(Index)	(100)	(107)	(104)	(114)	(125)	(128)	(132)	(136)	(147)	
GNP (Billions)	2,732.0	3,052.6	3,166.0	3,405.7	3,772.2	4,014.9	4,231.6	4,524.3	4,880.6	5,233.3
(Index)	(100)	(112)	(116)	(125)	(138)	(147)	(155)	(166)	(179)	
Grand Total % of GNP[g]	7.81%	7.47%	6.99%	7.13%	7.07%	6.78%	6.61%	6.47%	6.38%	6.26%

a = Includes freight, mail, express and, where applicable, subsidies and user fees.
b = Excludes use of small trucks/vans used almost exclusively for personal travel (included in passenger bill).
c = Represents shipping costs of imports, only, which are paid by U.S. shippers. Export freight costs in millions of dollars: 1980, 7,757; 1981, 8,028; 1982, 7,685; 1983, 8,133; 1984, 8,849; 1985, 8,846; 1986, 9,169; 1987, 10,060; 1988, 11,486.
d = Figures include foreign traffic moving on domestic inland waterways.
e = Figures include federal domestic freight waybill tax (5%).
f = Domestic freight forwarders' revenues after payments to line-haul carriers. 1980-88 figures based on rail use of forwarders/shippers associations.
g = Revised.
h = Preliminary.

continued

"Logistics productivity is a hostage to campaign financing."

Robert V. Delaney
Vice President
Cass Logistics

ulation of transportation," Delaney says, "and we must remove the other barriers if we are to see further savings." The barriers Delaney refers to are the last vestiges of regulation, and there have been indications recently that Congress may be inclined to consider removing them. Congressman Dennis Hastert (R-Ill.) recently introduced legislation that would ease market entry for transportation carriers and other logistics services. Hastert's bill, HR 4261, is focused on improving the efficiency of consumers of transportation services – shippers and receivers – rather than the carriers, Delaney says.

But the bill faces a tough battle. The smart money in Washington says HR 4261 will not receive a hearing before the appropriate committees, Delaney says, because, as he puts it, "logistics productivity is a hostage to campaign financing." Campaign contributions and honoraria from transport labor, management and trade associations are heavily targeted on

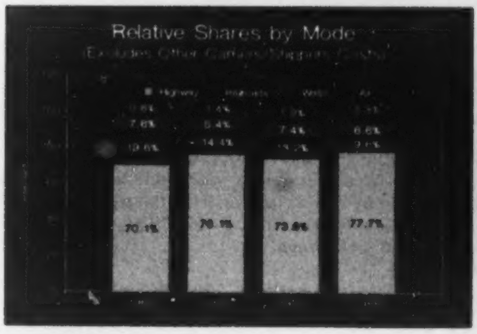
continued

FREIGHT CARRIERS' REVENUE
vs.
GENERAL PRICE TRENDS
(Revenue per Ton-Mile in Cents)

	Rail (Class 1)		Truck (Class 1)[a]		Air (Domestic)	
	Revenue per Ton-Mile	(b) Index	Revenue per Ton-Mile	(b) Index	Revenue per Ton-Mile	(b) Index
1980	2.87	100	18.00	100	46.31[c]	100
1981	3.18	111	20.00	111	50.15	108
1982	3.21	112	20.77	115	49.69	107
1983	3.12	109	21.23	118	49.30	106
1984	3.09	108	21.54	120	50.20	108
1985	3.04	106	22.90	127	48.62	105[d]
1986	2.92	102	21.63	120	44.81	97
1987	2.73	95	22.48	125	44.42[d]	96
1988	2.72	95	23.17	129	44.74[d]	97[d]

a = Represents Class 1 Instruction 27 General freight common carriers for 1970-1988 – all of which are predominantly less-than-truckload carriers. Average revenue per ton-mile and indexes with 1980 = 100 for Specialized truckload carriers were: 1980, 8.64 (100); 1981, 9.12 (106); 1982, 9.32 (108); 1983, 9.06 (105); 1984, 9.55 (111); 1985, 9.87 (114); 1986, 9.85 (114); 1987, 9.86 (114); and 1988, 9.84 (114).
b = Indexes with 1980 = 100
c = For 1980-1988, average revenue per ton-mile for domestic scheduled air carriers plus Federal Express (domestic operations): 1980, 55.13 (100); 1981, 59.94 (109); 1982, 67.44 (122); 1983, 76.05 (138); 1984, 84.28 (153); 1985, 102.23 (185); 1986, 105.43 (191); 1987, 109.78 (199); and 1988, 113.6 (206).
d = Revised

The only carriers able to raise rates from 1980 levels have been the LTL trucking firms and the airfreight companies. Rail rates remain below 1980 levels and truckload rates have remained flat.



Revenue shares for air and truck were up in 1990; water and rail were flat.

Airfreight rates have doubled since 1980, but other modes show little change.

members of Congress and State legislatures. So far, this tactic has effectively blocked any consideration of competitive reform.

"But without legislation that would enhance competition, such as removal of protection-oriented state economic regulation of trucking," Delaney says, "logistics productivity cannot get the 'kick start' it needs."

The Plight of the Railroads

Average rate levels for Class I railroads declined for the seventh consecutive year in 1988 and remain below 1980 levels. The Eno Foundation's Frank Smith says that although the railroads have cut employment by about one-third over the past several years, they still have a lot of cost cutting to do before they can become more profitable. "For an industry that has been screaming about its financial woes, their labor costs are very high," he says. This is largely because the rail industry's work rules are antiquated and its worker's compensation system is flawed. "You can work 10 minutes and get paid for a whole day," Smith says.

COMPENSATION PER FULL-TIME EMPLOYEE[a]
(Dollars)

1980	b	c
Transportation	20,677	24,764
Railroads	25,358	30,889
Trucking & whsg.	18,864	22,460
Water	22,990	26,384
Air (common carrier)	25,498	31,525

1985	b	c
Transportation	23,305	30,895
Railroads	36,746	46,792
Trucking & whsg.	22,291	27,009
Water	28,435	33,045
Air (common carrier)	31,798	39,541

1988	b	c
Transportation	26,986	33,323
Railroads	40,473	53,688
Trucking & whsg.	24,229	29,508
Water	30,090	35,157
Air (common carrier)	33,020	41,717

a = Employee includes executives for this analysis
b = Average wages and salaries
c = Average total compensation, including fringes

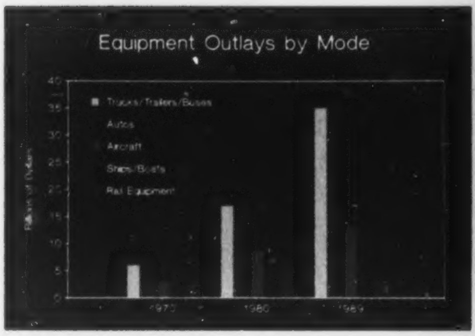
Compensation for railroad employees remains much higher than for other modes.

The railroads have been lobbying vigorously to get lawmakers to address its labor problems, but it has been distracted by the trucking industry's battle to gain approval for larger vehicle combinations. Shippers watched in 1989 as this confrontation grew nastier by the minute. Now, the railroads appear to be taking the fight before the general public, including efforts to portray larger trucks as unsafe and to position the railroads as the "environmentally conscious" transportation alternative.

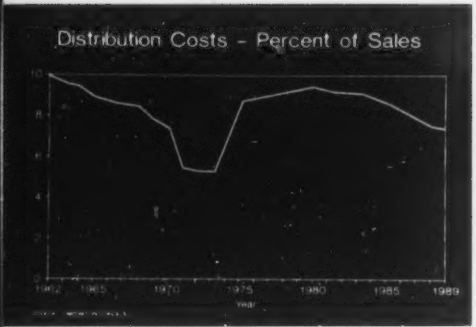
Robert Delaney doesn't think that strategy will work. "The ongoing conflict between the railroads and the truckers is wasteful and benefits no one, especially the shipping public," he says. "Both the railroads and the truckers have benefitted greatly from federal subsidies. Sure, the interstate highway system has been a bonanza for the trucking industry, but the railroads have had their share of government support too."

Frank Smith, however, says the idea that railroads will gain ground on trucks by positioning themselves as the environmentally conscious alternative is "a decent argument." He believes that while the catfight between truckers and railroads is unfortunate, the railroads will experience some measure of success by appealing to the public. "The trucking industry is going to experience more congestion, and the more congestion there is, the more antagonism there will be against trucks," he says.

According to Delaney, lawmakers should put the interests of shippers first when considering their political options for resolving the mess. The disagreement over vehicle sizes is a good example. "Whether there should be larger trucks on the highway should be a safety issue," he says, "and should not be tangled up in whether the railroads would lose traffic." ■



Shippers spent less on trucks last year, but spending for rail equipment increased for the third straight year.



The distribution function's efficiency rating is as high as it has been since the early 1970s.

Distribution costs: A hard road back

Distribution cost trends show that easy gains through transportation savings are pretty well dried up. Future gains will come through warehousing efficiency, reduction of inventory carrying costs and better customer service.

By Joseph V. Barks, Contributing Editor

In investment circles, it's return on equity. In retailing, it's gross profit margin. And for the distribution function, the key measurement of efficiency is usually defined through this question: What percentage of total sales are eaten up by distribution costs?

The most consistent source for tracking this benchmark of distribution efficiency – or inefficiency – has been the Physical Distribution Cost Database compiled annually by the consulting firm of Herbert W. Davis and Company, Englewood Cliffs, N.J. The Davis Database has been measuring distribution's primary cost components – warehousing, transportation, order entry/processing (customer service), inventory carrying costs, and administration – in various forms since 1962.

Now, some 30 years of reliable cost trend data is available to help us gauge how much real progress has been made, and where stumbling blocks to peak efficiency persist.

A Tale of Two Eras

As shown by the figure (top left), which tracks available data for distribution costs as a percentage of sales from 1962 through last year, the function's current "efficiency rating" of around 7.5 percent is about as good as it has ever been, except for a period in the early 1970s when costs amounted to only 5.5 percent of sales. A good argument can be made, however, that the current level represents a "modern era" record, to borrow a term used frequently in professional sports.

That's because the peak levels of the early 1970s were realized before the 1973 Arab oil embargo, a development that permanently changed distribution cost structures and marked the start of an entire new era in physical distribution management. In the beginning of that new era, the emphasis was on cost control, even if it came at the expense of distribution service and quality.

As the table at the bottom shows, it took until the mid-1980s before costs could be brought under control and forward strides could again be taken to create distribution efficiencies and begin to deliver acceptable service and quality in the more cost-intensive environment.

From 1984 through 1989, significant reductions in distribution costs as a percentage of sales dollars were reflected in each year's new Davis Database report. The table also shows, however, that even the percentage of sales dollar measurement can be misleading. When percentage change is tracked for the same period in terms of absolute distribution costs per hundredweight (dollars spent per hundred pounds of freight distributed), the downward trend is neither as deep nor as consistent.

In fact, the 1980s brought just as many years when this second measure increased as when it decreased, and the net effect from 1981 to 1989 was an overall increase in distribution costs per hundredweight. The implication is clear: Higher product

continued

PERCENT CHANGE EXPRESSED AS

	Percent of Sales Dollar	Cost per Hundredweight
1989	- 3.4%	- 1.2%
1988	-11.9	- 1.4
1987	- 4.2	+4.4
1986	- 7.8	- 4.6
1985	- 3.7	+3.3
1984	- 6.4	- 8.3
1983	- 1.4	+6.1
1982	- 0.8	+7.6
1981	- 0.5	+5.3

The fact that distribution costs as a percent of sales have dropped steadily since 1981 does not mean that absolute costs have fallen.

prices, not rediscovery or reapplication of sound distribution management skills, were probably most responsible for the "return" to distribution efficiency during this period.

A look at the figure at left lends further credence to this finding. It breaks down the net reduction in costs as a percentage of sales during the 1980s, to look at the three big components of distribution costs: transportation, warehousing and inventory carrying costs.

Of these three cost components, transportation is the area that has yielded the easiest, most dramatic and most direct cost improvements. The figure shows that much of the overall reduction in distribution costs as a percentage of sales that began in 1984 could be attributed to transportation-related savings. This was a period during which shippers' concerted efforts to cash in on the highly competitive, highly flexible transportation rate structure created by deregulation really began to pay off.

But while shippers should get due credit for securing these savings, this figure shows that minimal reductions—and in some cases *increases*—were being realized in other key areas. It was not until the very end of the decade, in fact, that shippers began to finally knuckle down and show improvement in some of the more challenging cost reduction areas. And in other, equally critical categories, they're still waiting to see the payoffs.

The bottom right table helps us see just where those improvements came—and just where more work remains to be done. A study of cost changes between the 1988 and 1989 Davis Database reports showed the most significant improvement not in transportation, but rather in warehousing and administrative costs.

Even in this final year of the decade, however, those gains were largely negated by no movement in the customer service cost category, and by a 2.5 percent increase in inventory carrying costs. The net result: only a 0.3 percent decrease from 1988 to 1989 in distribution costs as a percentage of sales, and a 0.9 percent increase when costs are measured in dollars per hundredweight.

Clearly then, as the decade drew to a close, there was still much room for improvement. To zero in on just where problems and opportunities now lie, let's take a closer look at what the latest numbers from the Davis Database can tell us about the current distribution cost structure of an average company.

Typical Payouts

The typical company in the latest Davis Database has annual sales of $849 million and ships over 5.5 mil-

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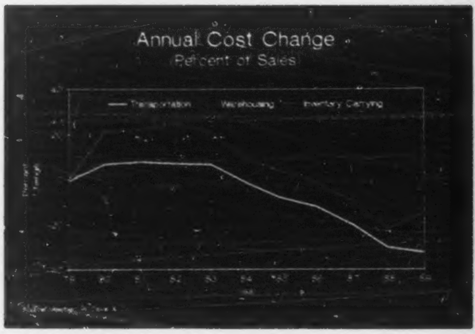
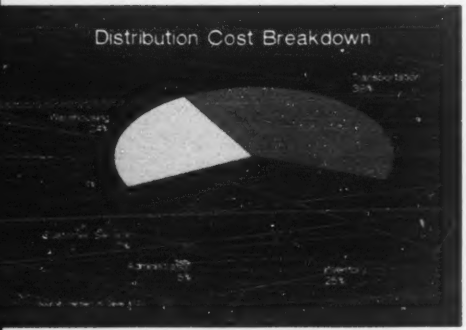


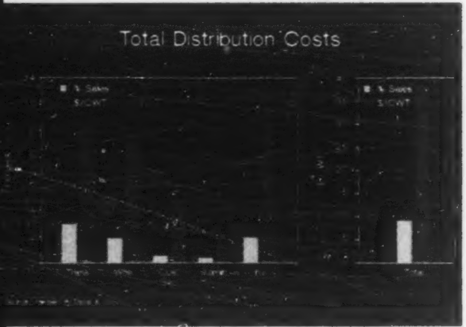
Shippers have done a good job cutting the freight bill, but have been less successful in other areas.

AVERAGE COMPANY—1989 DATABASE	Distribution Cost In		DISTRIBUTION COST CHANGES 1988-1989	
	% of Sales	**$/CWT**	**% of Sales**	**$/CWT**
Transportation	2.92	$10.50	-1.3	-0.1
Warehousing	1.83	$ 9.33	-4.3	+1.2
Customer Service	0.55	$ 4.97	0.0	+4.7
Administration	0.39	$ 2.05	-3.3	-2.9
Inventory Carrying	1.91	$12.59	2.5	-2.6
Total Costs	7.46	$38.15	-0.3	+0.9
Sales	$849 Million			
CWT	5,560,000			
Sales Value	$8.74 per pound			
Delivery paid by customer	17%			

The table at left shows that transportation is the biggest cost for the average company, followed by inventory carrying costs and warehousing. The table at right shows that while shippers made progress containing certain costs as a percentage of sales in 1989, those gains were offset by increases in absolute costs.



This chart shows the breakdown of distribution costs expressed as a percentage of sales.



Viewing costs in absolute terms ($/cwt.) offers a better guide for cost reduction efforts.

lion hundredweight of product. The average sales value of that product is $8.74 per pound.

When the distribution costs of this company are viewed from the perspective of a percentage of sales (bottom left table on previous page), transportation continues to account for the largest share. In 1989, transportation costs represented 2.9 percent of sales, followed by inventory carrying costs (1.91 percent) and warehousing costs (1.83 percent). Customer service and administrative costs represent roughly .5 percent of sales each, for a total ratio 7.46 percent.

The top left figure depicts the relative relationships of these cost components, with transportation accounting for a 39 percent chunk of all distribution costs as a percentage of sales, inventory and warehousing roughly one-fourth each, and customer service and administration rounding out the cost breakdown.

Once again, focusing solely on costs as a percentage of sales may be somewhat misleading. Look again at the profile of the typical company in the bottom left figure—but this time, peruse the cost values as represented in the $/cwt. column.

Seen in this light, transportation costs do not even comprise the primary distribution cost component; inventory carrying costs take that honor. Warehousing costs also carry more relative weight when costs are viewed in this fashion.

To use cost data as a guide for pinpointing areas of both improvement and lackluster performance, then, both measures of distribution cost efficiency should be analyzed. While costs as a percentage of sales will in general prove to be the most stable and comparable way for tracking costs, dollars spent per hundred pounds distributed can also prove to be a useful benchmark, because it takes into account proper utilization of warehouse space and labor, appropriate transportation rates and discounts, minimum inventory levels, and maximum inventory turns.

In the instance of the typical company in the 1989 Database, the "cross-checking" between the two measures shows clearly that equal, if not greater, attention should be given to warehousing and inventory cost controls. All told, the 1989 data presents a picture of a significant buildup of stocks that does not mesh well with current stated distribution management objectives of cost re-

continued

SERVICE PERFORMANCE—1989
AVERAGE COMPANY

		% Using Standard	Standard	Performance
Universal Measures				
Inquiry response	(% Ans.)	55.7	95.3	84.7
Complaints	(No./100)	23.3	3.0	5.0
Error rates	(No./100)	33.3	1.9	2.9
Standard Product Measures				
Total cycle time	(Days)	73.9	6.5	7.2
Internal cycle time	(Days)	76.1	3.0	3.3
Transit time	(Days)	75.0	2.9	3.0
Product Availability	(% order)	72.7	92.5	87.8
	(% lines)	53.4	95.9	93.3
	(% other)	30.7	98.1	97.5
Non-Standard Product Measures				
Shipped on time	(% order)	33.0	96.8	87.0
Shipments	(% complete)	26.1	91.7	82.6
Stated lead time	(weeks)	30.7	3.7	5.5

The increasing importance of these customer service measures has led to changes in distribution system organization and design that should result in overall cost reductions.

ductions and improved efficiencies through just-in-time logistics.

More Formidable Forces

As the Davis Database continues to track distribution cost data in the 1990s and beyond, several forces will make it more difficult for companies to make further headway in their quest to return to the efficiency levels enjoyed in pre-oil embargo days.

For one thing, those companies will have to continue to contend with managing and operating environments that are now vastly different from those of the 1960s and early 1970s. U.S. companies are now far from preeminent in their markets; they must lock horns with formidable competitors from many other countries.

For another, rising interest in customer service has further intensified competition and made management of the distribution function more difficult, because it must now exist in extremely lean, short-term, highly cost-sensitive surroundings. While technological advances continue, it is now much more difficult for distribution to command either the recognition or the resources that it needs to apply advanced technology and institute new efficiencies.

The good news is that the rise of customer service has influenced distribution system design in a fashion that should have a positive impact on productivity, and thus cost structures. Special Davis Database analyses of companies' customer service practices show increasing movement away from a cost-minimization approach to distribution toward a customer-driven viewpoint. As the table on page 34 shows, these companies are taking a closer look at key customer service measures such as response rates, error rates, cycle and transit times, product availability and lead times to try to realize lasting efficiencies in the face of swelling inventories.

Efforts such as these will be key to any company's performance, no matter what economic forces it operates under. Success in coping with growing distribution challenges will be a primary determinant of any company's ability to compete on a global scale. Now more than ever, the pressure is on to control and further reduce distribution costs, while at the same time maximizing the role of the function in improving service and market responsiveness. ■

AVERAGE DISTRIBUTION COST BY INDUSTRY

	% of Sales	$/CWT
All Companies	7.50%	$ 38.40
Industrial Non-Durable	9.45	58.71
Chemicals	8.79	7.15
Hospital/Medical Supply	10.25	120.59
Industrial Durable	8.59	48.88
Ind. Durable <$10/lb.	9.36	22.39
Ind. Durable >$10/lb.	5.62	77.22
Replacement Parts	11.53	51.59
Consumer Non-Durable	6.38	27.27
Food Products	7.40	8.39
Dry and Packaged	8.07	11.31
Canned and Processed	7.35	6.95
Temperature Controlled	6.55	5.71
Consumer Household Products	7.53	6.89
Non-Food Grocery	5.97	32.42
Pharmaceuticals	2.46	102.26
Consumer Durable	7.83	41.85
Retail Companies	7.34	36.08

When 1989 distribution costs are viewed by industry, there is surprisingly little deviation from the mean for all companies in the database. Exceptions are industries with high-value products, such as pharmaceuticals. Even in industries where there is potential for a significant cost variance—such as consumer goods, computers, machinery and chemicals—there is a tendency to stay close to the average.

KEY COST COMPONENTS

The cost categories shown in the Davis Database analyses are defined as follows:

Transportation: The cost of both primary (point of manufacture to distribution center) and secondary (distribution center to customer) movement of finished goods. Because primary movement is frequently LTL or other types of smaller shipment, secondary transportation traditionally costs about twice that of primary freight.

Warehousing: The cost of both plant and field warehouses, with labor comprising the highest element (about 55 percent), followed by space, direct materials, maintenance, etc.

Inventory: Carrying costs tied to the current value of materials located at any stage in the distribution pipeline. In 1989, the inventory figure was calculated on an 18 percent cost-to-carry basis.

Customer service: The cost of people, space, materials and equipment needed to take customer orders or handle customer inquiries.

Administration: People-associated costs for managers and planners in the distribution function. (Note: With the exception of warehousing, administration costs are separated from direct expenditures reflected in other cost categories. For example, the transportation category reflects the cost of the freight bill, but not of the people who manage transportation. The sales, benefits, portion of overhead, etc., associated with those people would be folded into administrative costs.)

U.S. trade balance steadily improves

In 1989, the trade deficit decreased by nearly $10 billion to $109 billion. However, greater uncertainties exist this year regarding U.S. and foreign economic growth and exchange rates, making precise estimates difficult.

In 1990, U.S. exports are projected to rise more quickly than imports, mainly because foreign economies are expected to grow faster than ours.

A DISTRIBUTION Staff Report

1989 U.S. Market Exports (F.A.S. Value)

		$ Billions
	Total Exports	**364.4**
1.	Canada	78.6
2.	Japan	44.6
3.	Mexico	25.0
4.	United Kingdom	20.9
5.	West Germany	16.9
6.	South Korea	13.5
7.	France	11.6
8.	Netherlands	11.4
9.	Taiwan	11.3
10.	Belgium-Luxembourg	8.7
11.	Australia	8.3
12.	Singapore	7.4

1989 U.S. Suppliers Imports (Customs Value)

		$ Billions
	Total Imports	**472.9**
1.	Japan	93.6
2.	Canada	88.2
3.	Mexico	27.2
4.	West Germany	24.8
5.	Taiwan	24.3
6.	South Korea	19.7
7.	United Kingdom	18.2
8.	France	13.0
9.	China	12.0
10.	Italy	11.9
11.	Hong Kong	9.7
12.	Singapore	9.0

The most notable changes in international trade in 1989, and projected for 1990, are on the export side. With the anticipation of a unified European marketplace, many U.S. companies are already working to take advantage of the new export opportunities that will soon be available. In addition, export markets are opening up in countries of Eastern Europe which were formerly closed to many Western goods.

Exports to Canada will probably grow even faster in 1990 as a result of the U.S.-Canada Free Trade Agreement, which is gradually making trade between the two countries less restrictive. Exports to Canada, our largest export market, grew 10 percent last year.

If U.S. economic activity grows at the modest rate indicated by most forecasts, U.S. import growth in 1990 is projected to remain moderate. Improvement in the trade balance in 1990 could be slowed by the effect on U.S. trade, due to the net appreciation of the dollar over the last two years against most major currencies.

The outlook for U.S. exports to Japan is more uncertain now, because of the huge drop in the Japanese stock market and the recent depreciation of the yen. This will undoubtedly affect Japan's economic growth, and its ability to import is not known. In the last 15 months, of particular concern, is the greater than 25 percent rise of the dollar against the Japanese yen. These exchange rates may affect U.S. trade in late 1990.

Growing U.S. Exports

As of April 1990, U.S. exports are projected to rise more quickly during the year than imports, mainly because foreign economies are now expected to grow faster than the U.S. economy, but at a slower rate than in 1989. So, demand abroad for U.S. goods is expected to expand more rapidly than our domestic demand rises for foreign goods. The net effect of all this is that relative price behavior on our trade balance is also expected to be positive. Possibly beginning late in the year, the dollar's rise would be expected to adversely affect export volume by making exports more expensive in foreign markets, and result in some increase in import volume because imported goods would be cheaper.

The continued expansion in U.S. exports forecast for 1990, particularly manufactured and other non-agricultural goods, is based on predictions of accelerated economic growth in our major trading partners abroad, particularly in the latter half of the year following the slowdown in the middle of 1989. Growth is expected to be especially strong in the newly industrialized countries of Asia, particularly South Korea.

The large positive shift in the manufacturer trade deficit last year reflected, to a large extent, the rapid growth of capital goods exports. This category comprises about half of the manufacturer export total and has historically been the mainstay of the growth in manufacturer exports.

continued

Last year, capital goods exports expanded by $15 billion, reflecting strong sales abroad of many types of machinery and rapid growth in aircraft exports, despite an end-of-year strike at one of the major aircraft exporting companies.

In the year ahead, continued gains can be expected in machinery exports, particularly in such products as construction machinery and special industrial machinery, for which U.S. manufacturers are well established in foreign markets.

Exports of computers and related equipment, however, are expected to be below last year's level because of intensifying competition from more foreign producers and the fact that many foreign markets are now being served by U.S. subsidiaries located overseas.

Imports Remain Steady

U.S. import growth in 1990 is projected to remain moderate if, as expected, U.S. economic activity grows at the modest rate indicated by most forecasts. A comparatively moderate expansion in imports of manufactured goods and other industrial products is currently foreseen.

The dollar strengthened 3 percent in 1989 on a trade-weighted basis against the currencies of 10 industrial countries, tending to make non-petroleum imports slightly cheaper and thus lowering the value of imports.

A major sector influencing the overall U.S. trade position in 1990 will be trade in manufactured goods. Last year, exports of manufactured goods increased 13 percent, more than twice the rate of growth of manufacturers imports, resulting in a $16 billion reduction in the manufacturers trade deficit from $106 billion in 1988 to $90 billion in 1989. If current expectations surface, this deficit will shrink further in 1990, although the improvement will not be as large as last year.

As with exports, imports of capital goods were also strong in 1989, particularly general industrial machinery, power generating machinery and computer equipment. These ar-

continued

Foreign economies are now expected to grow faster than the U.S. economy, but at a slower rate than in 1989.

U.S. Trade Balances, 1989
Listing of U.S. Merchandise Trade Balances
General Imports, Customs Value, Domestic and Foreign Exports, F.A.S. Value

U.S. Surplus Positions	$ Billions	U.S. Deficit Positions	$ Billions
		Total	-108.6
1. Netherlands	+6.6	1. Japan	-49.0
2. Australia	+4.4	2. Taiwan	-13.0
3. Belgium-Luxembourg	+4.1	3. Canada	-9.6
4. USSR	+3.6	4. West Germany	-8.0
5. United Kingdom	+2.6	5. South Korea	-6.3
6. Egypt	+2.4	6. China	-6.2
7. Spain	+1.5	7. Nigeria	-4.7
8. Ireland	+0.9	8. Italy	-4.7
9. United Arab Emirates	+0.7	9. Venezuela	-3.8
10. Turkey	+0.6	10. Saudi Arabia	-3.6
11. Pakistan	+0.6	11. Brazil	-3.6
12. Jamaica	+0.5	12. Hong Kong	-3.4
13. Panama	+0.5	13. Indonesia	-2.3
14. Bahrain	+0.4	14. Mexico	-2.2
15. Jordan	+0.4	15. Thailand	-2.1
16. Bermuda	+0.3	16. Malaysia	-1.9
17. Bahamas	+0.3	17. Angola	-1.8
18. Morocco	+0.3	18. Sweden	-1.8
19. El Salvador	+0.3	19. Singapore	-1.6
20. French Guiana	+0.3	20. France	-1.4

1989 U.S. Total Exports
F.A.S. Value—Millions

Product	Value
Total All Commodities	$363,766
Adj. for undocumented exports	15,638
Passenger transports	11,858
Parts for adp machines	9,532
Estimate of under $1501 data	8,513
Corn	6,476
Wheat and meslin	5,699
Parts of airplanes or helicopters, civil	5,051
Parts for vehicles	4,407
Soybeans	3,944
Digita prod unt w storage	3,620
Cigarettes containing tobacco	3,382
Chips, wafers f digital	3,374
Parts of turbojet a/c eng., civil	3,181
Veh, eng exc 1,500, exc 3,000cc-4cyl	2,957
Metallurgical bituminous coal	2,943
Fertilizers	2,827
Parts of airplanes or helicopters	2,772
Vehicles, eng exc-1500-3000cc, 4-6cyl	2,679
Paintings, drawing and pastels	2,504
Shipments under $10,001	2,480
Other cotton, not carded/combed	1,888
Chem wdpulp sulfate	1,618
Pts of oil and gas field mach	1,588
Hard magnetic disk drive units	1,522
Gold bullion unwrought	1,507
Pass veh, 3000 cc, 6 cyl	1,334
Cattle hides	1,303
Bituminous coal nt metallurgical	1,299
Repair/alter articles previous imported	1,280
Pass veh, 3000 cc and 6 cylinder	1,276
Chips, wafers f monolithic	1,258
Digital adp mch w cpu	1,225
Stampings of bodies of 8701 to 8705	1,213
Accessories or bodies hdg 8701, 8705	1,135
Soybean oilcake	1,136
Diam exc ov 0.5 carat	1,126
Turbojet tbn for civil aircraft	1,113

Source: U.S. Department of Commerce

Exports of consumer products may continue rapid growth in 1990, due to easier trading arrangements between the U.S. and Canada and Mexico.

1989 U.S. General Imports Customs Value – Millions

Product	Value
Total All Commodities	$473,397
Crude petroleum	29,668
Pass mtr veh, nesoi, 4 cyl	16,096
Pass veh, ov 4 bt nt ov 6 cyl	14,918
Products of U.S. returned after export	8,456
Parts of adp mach	6,886
Parts, nesoi, or motor vehicles	6,598
Crude petroleum	5,732
Newsprint paper	4,335
Heavy fuel oils	3,790
Truck, gvw-2.5 tons	3,657
Truck, gvw-2.5 but -5m tons	3,645
Pass veh, ov 6 cyl	3,638
Sprig rec pat eng	3,237
Diam exc weighng ovr 0.5 ct	3,139
Unleaded gasoline	3,024
Hard disk drive unt	2,902
Estimate of low valued items	2,761
Pass mtr veh, 1000 cc but -1500cc	2,610
Video cassette recorder/players	2,561
Pass veh, ov 6 cyl, 1500-3000cc	2,271
Digta proc unt	2,101
Monolithic integrated circuits	2,014
Chem wdpulp sulfate	1,958
Pass veh, ov 4 bt nt ov 6 cyl, ov 3000cc	1,940
Parts, of airplanes or helicopters	1,887
Light fuel oils	1,883
Gear boxes for vehicles	1,869
Coffee, not decaffeinated	1,681
Sta wgn un 4 cyl, 1500-3000cc	1,677
Monolithic integrated circut ram	1,617
Insulated wiring sets	1,596
Parts of turbojet or turbopropeller	1,596
Natural gas	1,583
Turbojet aircraft engines	1,472
Spruce wood	1,443
Condensate derived from natural gas	1,405
Gold jewelry, wares	1,368

Source: U.S. Census Bureau/Foreign Trade Division

rivals should continue to grow, but at a slower rate than last year.

Consumer Imports & Exports

Exports of consumer products may continue rapid growth in 1990, due to easier trading arrangements between the U.S. and Canada and Mexico. Topping the list of consumer goods exports quickening their pace are clothing, footwear, furniture and other consumer durables. On the import side, consumer items continued to slow from high growth rates in mid-decade, growing only 7 percent in 1989. Imports of consumer durables are expected to slow in 1990, partially resulting from the decline in domestic construction activity.

Automotive imports, while flat in 1989, are expected to continue at about the same rate in 1990. However, automotive imports fell in both value and quantity in 1989, and are expected to drop more in 1990. The biggest single factor in declining sales of imported cars during the late 1980s has been the depreciation of the dollar from its early peak in 1985, pushing the cost of imported automobiles significantly higher.

The import share of the U.S. auto market fell from 29 percent in 1988 to 28 percent in 1989. The share is expected to be about the same in 1990, but it will be a share of a smaller market.

The trade surplus in advanced technology products, which comprised about one-sixth of total U.S. trade in 1989, fell to $25 billion in 1989, from record 1988 levels, as exports grew 6 percent while imports rose nearly 15 percent.

Agricultural Surplus Continues

Despite a sharp slide in agricultural export prices throughout the year, both the volume and average prices of agricultural exports rose about 4 percent, resulting in a value increase of 8 percent to $41 billion. Despite this, agricultural exports will not be a strong contributor to U.S. export growth in 1990. Continuing price declines and moderate volume growth will result in only a small increase in value in 1990, ending the upswing that started in 1986.

Overall, demand abroad for U.S. farm products is expected to remain strong, but prices of most major products are projected to decline, partly as a result of the 1985 Farm Act, which was designed to increase worldwide competitiveness in the agricultural sector. The EC92 and increased shipments to the USSR, Mexico and the Pacific Rim countries will boost exports.

Because of lower domestic wheat production and an unexpectedly large South American crop, wheat exports are expected to decline in both volume and price in 1990. However, corn shipments are forecast to expand sharply and prices to firm due to limited competing supplies.

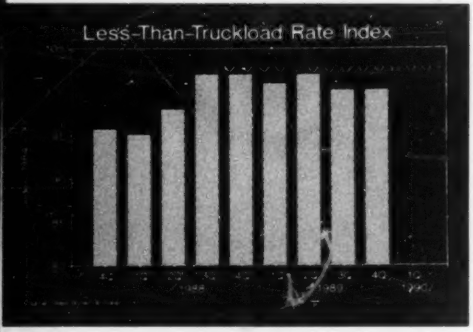
Soybean shipments are expected to rise sharply in volume, but the value will fall from last year because of lower prices resulting from abundant worldwide supplies. And cotton exports are forecast to advance from very high 1989 levels because of strong foreign demand, competitive U.S. prices and reduced supplies in two major competitor countries – China and Pakistan. Some gains are expected in other export commodities, such as tobacco and meat, but losses are expected in sales of rice and animal feeds.

Imports of agricultural products are expected to remain at the record levels reached last year, reflecting the impact of the December freeze in Texas and Florida. Cocoa and rubber imports are expected to decline in both value and quantity.

Growing Oil Bill

The continued increase in the volume of oil imports, coupled with little change in prices, is expected to swell the value of oil imports by $3 to $5 billion in 1990. If OPEC agreements or other factors cause a reduction in output growth this year, prices could rise.

While these higher volumes will again boost U.S. payments for imported petroleum and products in 1990, the increase should be less than in 1989. Oil prices would average about the same as the $16.80 per barrel in 1989. The sharp volume and price increases in the value of petroleum led to a $10 billion increase in petroleum imports. ■



Many carriers took price increases early this year to offset the deep discounts that hurt results in 1989.

A lesson in slow growth

Although 1989 was a poor year for the LTL industry, most carriers came through the year with a profit—and a new respect for pricing discipline.

By Thomas A. Foster, Editorial Director

After enjoying a strong financial performance in 1988, the less-than-truckload (LTL) motor carrier industry suffered a significant decline in earnings in 1989. In fact, the fourth quarter of 1989 was the worst the industry experienced in recent history, with the average LTL carrier reporting an operating ratio of 99.7.

"The dismal profit picture reflects a margin squeeze due to higher costs and competitive pressure on rates," says Steven R. Klein, an analyst with Standard & Poors in New York. "Operating margins for Class I carriers in 1989 averaged about 3.8 percent compared with a pre-deregulation norm of 5.8 percent."

Most LTL carriers managed to increase revenues in 1989, but the majority of carriers saw their bottom lines drop. The five largest LTL carriers all experienced double-digit drops in net operating income, which is what the carrier earns after normal operating expenses are subtracted from revenues.

Such poor numbers have elicited cries of alarm from financially shaken carriers. Earlier this year, the Regular Common Carrier Conference (RCCC) of the American Trucking Associations petitioned the ICC to establish minimum rate standards, presumably to save LTL carriers from their own pricing practices. To remove increasing competition from contract carriers, and perhaps to prevent existing LTL carriers from developing a contract LTL market, the RCCC also requested that all rates, including those negotiated privately between shippers and contract carriers, be published openly.

While few shippers or carriers expect the ICC to turn back the clock on deregulation, the RCCC petition highlights the desperation of the LTL industry.

The poor financial performance in

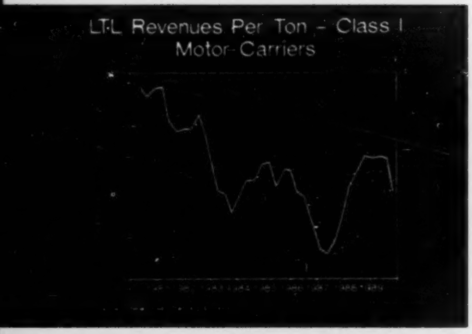
continued

From 1980 to 1989, operating profits for Class I general freight carriers fell 30 percent in nominal dollars. Profits, adjusted for inflation, were off more than 50 percent.

NATIONAL & INTER-REGIONAL LTL

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Yellow Freight	$2189.64	$1991.60	+9.94	$36.87	$110.15	-66.53	98.30	94.50	-3.80
2.	Consolidated Freightways	1894.95	1749.18	+8.33	94.84	105.83	-10.38	95.00	93.90	-1.10
3.	Roadway Express	1835.50	1693.60	+8.38	83.82	100.56	-16.65	95.40	94.10	-1.30
4.	Overnite	697.78	638.49	+9.29	62.95	82.61	-23.80	91.00	87.10	-3.90
5.	ABF	630.14	616.77	+2.17	19.26	26.01	-25.95	96.90	95.80	-1.10
6.	Carolina Freight	538.89	531.56	+1.38	7.49	25.59	-70.73	98.60	95.20	-3.40
7.	ANR	416.35	468.01	-11.04	-22.20	-7.10	-212.68	105.30	101.50	-3.80

Source: ICC/Transportation Technical Services
Data not available for certain carriers, including Trancon and P.I.E. Nationwide.



Analysts say carriers used "defensive" discounting to hold onto business in 1989, causing rates to drop.

1989 can be viewed in two ways. The first perspective is that of the RCCC, which says it is an indication that deregulation is out of control and is destroying the LTL industry. The second perspective is to view the performance of the LTL industry in the context of history.

"Ten years after motor carrier deregulation, the shakeout process is still going on," says Steven Klein, "and the remaining carriers are learning to adapt. But they are having a tougher time making a profit."

Klein points out that from 1980 to 1989 operating profits for Class I general freight carriers fell 30 percent in nominal dollars. Profits, adjusted for inflation, were off more than 50 percent. Rate discounting is the most direct cause of this slip in margins, but Klein says there has been an evolution in discounting that has shaped the business strategies of the LTL industry.

"Rate discounting has come in waves," says Klein. "The first wave came immediately following the passage of the Motor Carrier Act and was an effort to grow territories and build a broader customer base. This was the most aggressive period of discounting, and it is the time when we saw the most carriers pushed out of the industry.

"The second wave came right after the two-tier Teamster contract of 1986 was signed," says Klein. "Certain carriers suddenly had much lower wage costs than their competitors, so they tried to take advantage of their lower costs to gain market share by discounting deeper. The discounting in 1986 was also an effort to keep up with capacity. Carriers had added tandem trailers and enlarged their systems. They felt they could stand to take a lower price to keep the pipeline full."

Discounted pricing was an aggressive marketing weapon for the LTL carriers during these two periods, and many carriers let it ruin their businesses, notes Klein.

This discounting wave ended with the new Teamster contract in April of 1988, which reduced the advantage

continued

NEW PENN: PEOPLE-RICH AND ASSET-SMART

New Penn Motor Express had net income of almost $18 million last year on revenues of $113 million. Its operating ratio of 80 is easily the lowest in the industry. What's its secret?

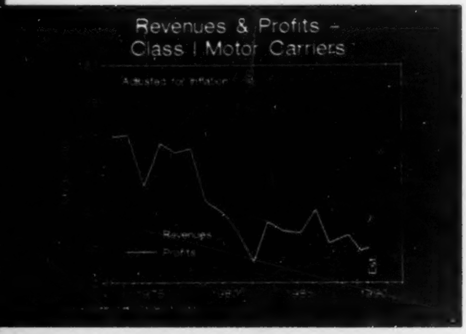
"People," says Edward H. Arnold, president of the Lebanon, Pa.-based carrier. "Nobody tries to be a star. They all work together using their individual abilities to make the company prosper."

Those people have also proved extremely adept at managing assets. While the carrier's main competitors in the Northeast are an average 25 percent larger than New Penn, they operate twice as many terminals with higher overhead. "For a regional, multi-terminal carrier, our revenue per terminal is extremely high," says Arnold. This high density of freight per terminal enables New Penn to provide better, more cost-effective service. "We do virtually no breakbulk, except for a small amount of interline freight. We load direct, which also improves service, lowers damage and reduces costs," he says.

New Penn uses its financial strength to stay at the top of the profitability list. "If we see something that will make us more cost effective or help us to improve our service, we will do it," Arnold says. "We don't sit around saying, 'Where will we get the money?' "

Like the time IBM introduced a new computer that New Penn's MIS people believed would provide a quantum leap in the carrier's information systems capabilities. New Penn got the 12th machine IBM delivered. The computer, which is used at major terminals, has helped New Penn develop an extremely efficient costing model, a user-friendly information system that customers can call into to obtain information on status of shipment, rates and freight charges, and a computerized dispatch system that enables New Penn to tell customers when their freight will be delivered within a 15-minute window.

New Penn's operating philosophy comes from Quality guru Tom Peters, who advocates doing 100 things 1 percent better rather than one thing 100 percent better. "We don't have one thing that we can do 100 percent better," Arnold says, "but we have 100 things we can do 1 percent better."



From 1980 to 1989 operating profits for Class 1 motor carriers fell 30% in nominal dollars, largely due to discounting.

of the two-tier wage agreement. New driver wages more quickly matched the rate of veteran drivers, so the cost structure for all unionized carriers equalized.

"The latest discounting wave was in 1989, but it was different from the earlier two," says Klein. "LTL carriers primarily used discounting defensively, to hold on to business during the economic slowdown. It's the type of discount pricing any supplier uses in a business downturn. It is the mildest form of discounting, and it is what we will see from now on when business cycles swing down."

Klein does not see 1989 LTL carrier performance as a sign of impending disaster. "Inventories were simply being held, not moved," says Klein.

The short-term increase in fuel prices also hurt margins in the fourth quarter, according to Klein.

"For LTL carriers, fuel is only about 5 percent of total cost," says Klein, "but when fuel goes up nearly 50 percent, as it did very briefly, that can mean a half point off the carrier's margin. That drop is a lot for carriers earning 3 percent margins or less."

Klein does see one curious trend developing out of 1989 LTL performance. There seems to be a trend toward shrinking lengths of haul for many carriers. "If this is a long-term trend it could show that regionals are growing faster than the nationals and inter-regionals," says Klein. "It could also mean there is a reverse in the market concentration the big LTL carriers had been gradually building up."

Based on 1989 net operating incomes and operating ratios, regional LTL carriers tended to perform better than the big carriers.

Most major LTL carriers in the East, Southeast and West actually improved their net operating incomes. Many LTL carriers in the Midwest and South Central regions had worse performance than in 1988.

Don't Hit the Panic Button Yet

The financial community as a whole seems to agree that the poor performance of the LTL industry in 1989 is nothing to panic about.

"The sluggish economy last year just took three points right off the operating ratios for many carriers," says George Robertson, a trucking industry analyst with Alex. Brown & Sons of Baltimore, Md. "Many industries suffered similar margin squeezes last year, so the higher operating ratios for LTL carriers are nothing to get alarmed about.

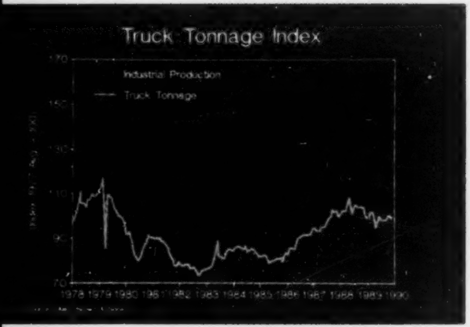
"There is no doubt that is a tougher business than in the past," says Robertson. "Our economy is not really performing badly, yet the margins for the LTL industry earlier this year were worse than they were in 1982, which was the worst recession

continued

NORTHEAST/MIDDLE ATLANTIC LTL

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Preston Trucking	$366.94	$368.04	-0.30	$4.36	$10.64	-144.04	98.80	97.10	-1.70
2.	St. Johnsbury	313.55	296.90	+5.61	27.82	28.25	-1.55	91.10	90.50	-0.60
3.	APA Transport	133.35	129.15	+3.25	9.56	8.36	+12.55	92.80	93.50	+0.70
4.	TNT Red Star	146.04	127.42	+14.61	7.33	4.94	+32.61	95.00	96.10	+1.10
5.	New Penn	113.27	109.55	+3.40	22.63	20.12	+11.09	80.00	81.60	+1.60
6.	Estes	89.94	88.45	+1.68	11.20	13.83	-23.48	87.50	84.40	-3.10
7.	Lyons	61.45	72.54	-15.29	-6.83	-0.59	-91.36	111.10	100.80	-10.30
8.	Wilson	57.66	58.81	-1.96	4.14	5.91	-42.75	92.80	89.80	-3.00
9.	Con-Way Eastern Express	67.73	51.79	+30.78	-6.93	-5.39	-22.22	110.20	110.40	+0.20
10.	North Penn Transfer	41.13	39.47	+4.21	-1.44	0.43	–	103.50	98.90	-4.60

Source: ICC/Transportation Technical Services



Freight volumes have grown steadily, so if carriers can avoid predatory pricing they should improve profits.

in recent history."

Robertson says the LTL industry has to learn how to make money in good times and avoid cutting its own throat in bad times.

"The economy bounced back in the first quarter and that has helped LTL margins," says Robertson. "Profits grew in the mid-single digits during the first quarter and appear to be holding at that level. The rate increase of June 4 is sticking and should drop right to the bottom line, so most carriers should see a couple of points improvement in their operating ratios this year. Even the negative impact of Teamster wage increases in April should not hurt profitability too much."

Steven Klein of Standard & Poor's agrees that the recent rate increases have helped the LTL industry's current financial position, but he is worried about the future.

"There have been more rate increases in the past 12 months than ever before," says Klein. "For now, shippers are accepting these rate increases, although reluctantly. They realize that carriers are in a bad way and need the increases.

"Economic growth is still not robust, so I'm afraid that defensive discounting is going to erode the benefit of these increases to the carriers," says Klein. "Even though LTL rates are running ahead of last year, the net gain is still below the rate of inflation. Carrier costs are likely to grow faster than rates."

The economic outlook is a big question mark for the LTL industry, and most industry experts have taken a conservative approach.

"We think the economy will be flat for the rest of the year," says Alex. Brown's Robertson. "That means the LTL carriers should not expect further improvement in their profits in 1990.

"In 1991, unless we see a rebound in the economy of 1 to 2 percent, we expect LTL performance to track 1990 performance. Margins could actually fall if carriers discount too much to maintain volumes," notes Robertson.

According to Robertson, how LTL carriers manage their marketing and pricing strategies in a slow economy is more important than how they take advantage of a strong one.

He says the major carriers have been less aggressive with their discount strategies, and that has helped them avoid serious profit problems. Increases in industrial production and freight volume have gradually improved revenues. The trick is to maintain maximum revenue growth by avoiding predatory pricing. If that can be accomplished, profitability will return to acceptable levels.

"LTL carriers are trying mostly to improve their margins rather than gain market share, and that shows a new discipline the industry needs," says Robertson. "The carriers that maintained aggressive pricing strate-

continued

MIDWEST LTL

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Central Transport	$278.82	$309.64	-9.95	$0.84	$10.32	-91.86	99.70	96.70	-3.00
2.	Jones Truck Line	218.09	193.01	+12.99	6.75	4.77	+41.51	96.90	97.50	+0.60
3.	TNT Holland	206.24	181.95	+13.35	21.44	18.97	+13.02	89.60	89.60	0.00
4.	Churchill	145.01	139.55	+3.91	3.18	6.26	-49.20	97.80	95.50	-2.30
5.	Advance Transportation	102.99	94.78	+8.66	2.80	2.75	+1.82	97.30	97.10	-0.20
6.	Arkansas Freightways	97.59	73.08	+33.54	7.84	6.39	+22.69	92.00	91.30	-0.70
7.	Hyman	91.14	84.86	+7.40	1.78	0.43	+313.95	98.00	99.50	+1.50
8.	Jones Transfer	65.75	72.00	-8.68	1.77	-2.41	–	97.30	103.30	+6.00
9.	Fore Way	60.77	55.78	+8.95	1.14	1.04	+9.62	98.10	98.10	0.00
10.	Be-Mac	51.22	36.78	+39.26	0.45	1.66	-72.89	99.10	95.50	-3.60
11.	OK Trucking	42.53	47.08	-9.66	0.47	1.11	-57.66	98.90	97.60	-1.30
12.	Gross Common Carrier	37.98	36.16	+5.03	-0.54	0.12	–	101.40	99.70	-1.70

Source: ICC/Transportation Technical Services
Data not available for certain carriers, including Spartan Central and Con-Way Central Express.

gies aren't with us anymore."

Robertson says a good example of how the LTL industry has learned to price and market in a more disciplined fashion is the way major carriers have absorbed business from failed or weakened carriers such as Brown, Transcon and others.

"As it became clear that the business of these carriers was up for grabs, the Big Three LTL carriers were very selective," says Robertson. "They wanted only the freight that would improve their margins. The marginal freight went elsewhere. Carriers are learning that the bottom line is more important than market share.

"Not only is solid profitability crucial for riding out sluggish economies, but carriers with financial strength can use it effectively to gain business," he adds. "Major shippers only want to deal with financially viable carriers."

According to Robertson, the large LTL carriers should expect their long-term operating ratios to average about 94. Regional carriers will not do as well, although non-union operations or those with special advantages will actually out-perform the national LTL carriers.

"A 6 percent margin doesn't sound like much," says Robertson, "but the returns to shareholders can be adequate if the carrier has the right capital structure. LTL carriers need debt of 20 to 30 percent of total capital. So the 6 percent margin is leveraged to the average returns for most mature businesses." ■

SOUTHEAST LTL

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Watkins	$203.68	$171.65	+18.66	$10.05	$7.36	+36.55	95.10	95.70	+0.60
2.	Southeastern	129.39	119.98	+7.84	10.57	9.27	+14.02	91.80	92.30	+0.50
3.	AAA Cooper	136.37	116.47	+17.09	13.46	14.14	-4.81	90.10	87.90	-2.20
4.	Old Dominion	127.69	114.79	+11.24	6.26	5.31	+17.89	95.10	95.20	+0.10
5.	Averitt	113.10	87.23	+29.66	8.04	7.61	+5.65	92.90	91.30	-1.60
6.	Saia	85.62	73.44	+16.58	11.80	9.37	+25.93	86.20	87.20	+1.00
7.	Transus	70.54	68.79	+2.54	0.39	0.60	-35.00	99.50	99.10	-0.40
8.	Malone	63.67	52.77	+20.66	0.82	0.66	+24.24	98.70	98.80	+0.10
9.	Smalley	49.74	45.04	+10.44	-0.84	1.40	-160.00	101.70	96.90	-4.80

Data not available for certain carriers, including Spartan Express and Con-Way Southern Express.

TEXAS & SOUTH CENTRAL LTL

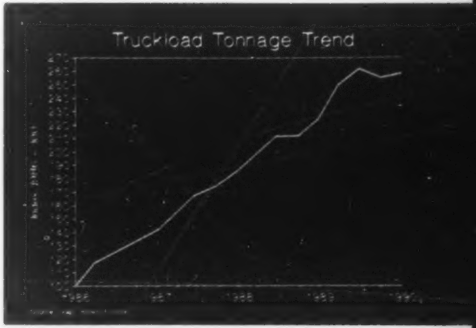
	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Central Freight (TX)	$213.26	$211.42	+0.87	$11.60	$19.14	-39.39	94.60	90.90	-3.70
2.	Merchants Fast Motor Lines	99.78	88.59	+12.63	1.37	0.53	+158.49	98.60	99.40	+0.80
3.	Red Arrow	25.33	23.81	+6.38	-1.12	-3.37	+66.77	104.40	114.10	+9.70

WESTERN & ROCKY MOUNTAIN LTL

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Viking	$226.07	$205.15	+10.20	$20.68	$14.69	+40.78	90.90	92.80	+1.90
2.	NW Transport	181.52	172.33	+5.33	11.46	13.78	-16.84	93.70	92.00	-1.70
3.	G.I. Trucking	84.26	75.00	+12.34	2.45	-2.60	–	97.10	103.50	+6.40
4.	Willig	79.21	75.57	+4.82	4.92	5.35	-8.04	93.80	92.90	-0.90
5.	TNT Bestway	54.25	48.51	+11.83	5.44	3.59	+51.53	90.00	92.60	+2.60
6.	Lynden	48.37	39.38	+22.83	4.29	0.14	+2964.29	91.10	99.60	+8.50
8.	Di Salvo Trucking	41.85	42.78	-2.17	-1.42	-0.82	-73.17	103.40	101.70	-1.70

Source: ICC/Transportation Technical Services
Data not available for certain carriers, including Con-Way Western Express.

Mixed results for TL carriers



TL carriers are cutting back on capacity as tonnage levels fall off.

A precious few TL carriers are growing by leaps and bounds, but sustainable earnings are harder to find, especially for the tank truck carriers.

By Thomas A. Foster, Editorial Director and Kurt Hoffman, Contributing Editor

For the thousands of truckload (TL) carriers in the U.S., 1989 was a year of winners and losers. The larger TL carriers that enjoyed continued access to financing sources saw their volumes and revenues soar. For the other 99 percent of the industry, 1989 was a tough year.

"In 1989, you had the effect of all the trucks that were added in 1988 and the first half of 1989," says John Larkin, an analyst with Alex. Brown and Sons of Baltimore. "This produced a big jump in revenue for the stronger companies, which sensed the opportunity to continue grabbing market share as financing sources began to dry up for weaker carriers."

However, the larger players have discovered that the game in the long-haul high-density lanes, where most of the rubber-tired assets were being deployed, essentially is over. Virtually all of the small mom and pop carriers and owner-operators of

continued

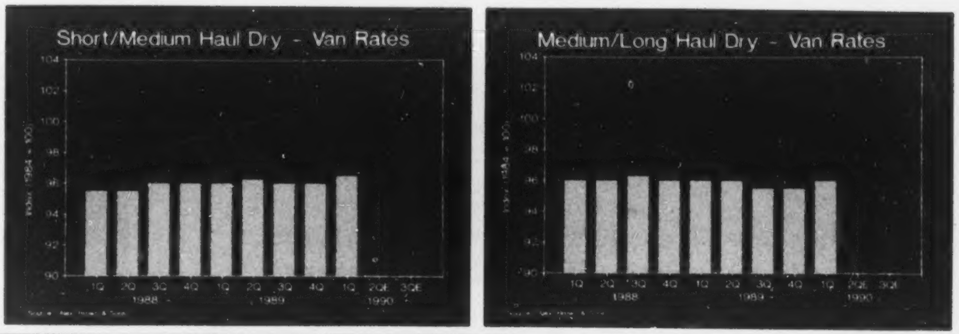
SCRATCHING A NICHE

If flexibility and the ability to manage change count for anything in the 1990s, then Landstar System believes it has positioned itself just right for fast growth. The Stamford, Conn.-based carrier is actually a network of five separate truckload carriers: Ranger Transportation, Gemini Transportation Services, Independent Freightway (Inway), Ligon Nationwide and Poole Truck Line.

"Maintaining individual operating units is an important go-forward strategy for Landstar in the 1990s," says Jeffrey Crowe, president and CEO. "It allows each carrier to stay focused on a specific mission." The service needs of shippers will change even more rapidly in the 1990s than they did in the 1980s, Crowe believes. And in that environment, the carrier that can move quickly will win. "The reason we retain separate operating units," Crowe says, "is because it allows us to be flexible, not devoting an entire monolithic organization to one strategy."

For example, Landstar is working now on establishing an international service through the Gemini unit; it is in the process of negotiating strategic partnerships with foreign partners, mainly freight forwarders. To try and put a service offering together for the whole Landstar system would be an unwieldy task. "If we were just one organization, our ability to focus on a mission like that would be difficult," Crowe says.

The five carriers last year combined for over $600 million in revenue, making Landstar the largest truckload carrier overall. Each of the five units has different operating capabilities. Each carrier has a certain amount of specialized equipment. For some of its large national accounts Landstar can combine these unique capabilities into a customized, integrated service package. But Crowe says, "There's not a size that we want to arrive at. We want to concentrate on specialized niches."



TL rates are increasing for the short and medium hauls (left) faster than rates are climbing for long-haul movements. The only shippers resisting the trend are bargain hunters looking for low-cost backhauls.

TRUCKLOAD CARRIERS

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	J.B. Hunt	$509.28	$392.55	+29.74	$61.75	$59.74	+3.36	87.90	84.80	-3.10
2.	Schneider National*	454.64	302.92	+50.09	16.07	7.07	+127.30	96.50	97.70	+1.20
3.	Ryder Distribution	281.50	251.76	+11.81	-4.47	5.05	–	101.60	98.00	-3.60
4.	Werner Enterprises	251.58	191.44	+31.41	31.60	28.21	+12.02	87.40	85.30	-2.10
5.	N.A. Van Line Commercial	232.73	277.48	-16.13	-25.34	2.24	–	110.90	99.20	-11.70
6.	Builders Transport	228.23	203.86	+11.95	4.06	8.08	-49.75	98.20	96.00	-2.20
7.	Ranger	203.24	209.93	-3.19	5.47	2.85	+91.93	97.30	98.20	+0.90
8.	Inway	145.45	130.80	+11.20	5.17	1.66	+211.45	96.40	98.70	+2.30
9.	National Freight	144.41	133.20	+8.42	5.24	-6.60	–	96.40	105.10	+8.70
10.	MNX	123.59	85.23	+45.01	-7.62	3.95	–	106.20	95.40	-10.80
11.	Crete Carriers	111.76	95.94	+16.49	5.34	4.68	+14.10	96.90	95.20	-1.70
12.	Contract Freighters	110.11	99.21	+10.99	11.54	14.37	-19.69	89.50	85.50	-4.00
13.	Tri-State	104.80	93.72	+11.82	1.58	-0.46	+443.48	98.50	100.50	+2.00
14.	Poole	104.52	103.00	+1.48	0.48	n/a	n/a	99.50	98.30	-1.20
15.	Stoops	104.03	104.53	-0.48	1.82	1.54	+18.18	98.30	98.50	+0.20
16.	Anderson	103.41	83.82	+23.37	5.76	4.85	+18.76	94.40	94.20	-0.20
17.	Munson	99.64	82.93	+20.15	4.46	7.37	-39.48	95.50	91.10	-4.40
18.	M.S. Carriers	96.81	68.48	+41.37	15.42	10.68	+44.38	84.10	84.40	+0.30
19.	Dart	90.77	85.14	+6.61	5.08	5.53	-8.14	94.40	93.50	-0.90
20.	Gemini	90.16	89.04	+1.26	2.61	2.44	+6.97	97.10	97.30	+0.20
21.	Ace Transportation	89.27	64.53	+38.34	2.33	3.00	-22.33	97.40	95.30	-2.10
22.	Universal Am-Can	87.87	78.61	+11.78	-2.23	5.32	–	102.50	93.20	-9.30
23.	Ligon	82.80	89.33	-7.31	n/a	n/a	n/a	96.80	98.50	+1.70
24.	Roadrunner	81.06	74.27	+9.14	11.63	6.65	+74.89	85.70	91.00	+5.30
25.	New Prime	78.60	61.19	+28.45	8.31	6.31	+31.70	89.40	89.70	+0.30
26.	Jack Gray	77.79	76.45	+1.75	7.86	7.46	+5.36	92.50	90.20	-2.30
27.	Whiteford Transport	73.93	124.25	-40.50	14.25	10.47	+36.10	80.70	91.60	+10.90
28.	Marten	73.31	67.17	+9.14	0.82	3.87	-78.81	98.90	94.20	-4.70
29.	Country Wide	71.08	87.83	-19.07	-9.20	0.41	–	112.90	99.50	-13.40
30.	PAM	70.12	78.78	-10.99	-5.16	2.05	–	107.40	97.30	-10.10
31.	Donco	69.77	60.45	+15.42	-0.97	2.50	–	101.40	95.90	-5.50
32.	Freymiller	69.15	58.74	+17.72	6.26	3.56	+75.84	90.90	93.90	+3.00
33.	Mid West Coast	68.00	69.17	-1.69	2.88	1.70	+69.41	95.80	97.50	+1.70
34.	Jones Motor	62.15	68.55	-9.34	0.45	1.09	-58.72	99.30	98.40	-0.90
35.	McGil	60.80	57.97	+4.88	1.12	1.05	+6.67	98.20	98.20	0.00
36.	Pre Fab Transit	59.80	72.18	-17.15	1.47	2.18	-32.57	97.50	97.00	-0.50
37.	PST	58.64	59.30	-1.11	2.74	4.33	-36.72	95.30	92.70	-2.60
38.	Southwestern Motor Transport	56.97	54.72	+4.11	1.36	2.66	-48.87	97.60	95.10	-2.50
39.	Heartland	48.30	34.57	+39.72	1.20	1.82	-34.07	97.50	94.70	-2.80

*** Figures for Schneider include all divisions.**
Source: ICC/Transportation Technical Services
Data not available for certain carriers, including CRST, Carretta and Mercer.

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any size have been flushed out of that market and replaced with stack trains and high-service truckload carriers, Larkin explains.

With those high-density corridors saturated to the point where profitability virtually has disappeared, truckload carriers are turning their focus to secondary lanes where they are actively seeking niches in the market to maintain revenues and/or gain market share. Some carriers are concentrating on length of haul niches, some are after customer niches, and others are getting involved in related businesses such as distribution and warehousing.

"It's an exciting situation," says Larkin. "Larger carriers really cannot add more equipment without disrupting the pricing environment in today's market, so they have to join the niche search. While no reliable formula for penetrating niche markets has emerged, consolidation in these secondary lanes is inevitable. The big question for the 1990s is, 'Which carriers are going to move into which niches?' "

Intermodal operators are also plying for the same secondary lanes for new business, but the truckers have an advantage because these lanes tend to offer shorter hauls and lower densities, thus generally precluding the introduction of stack train service for two primary reasons, says Larkin. First, in most of these secondary lanes, there aren't 200 boxes moving in both directions each night. Second, the traffic lacks the length of haul over which intermodal operators can spread the fixed costs associated with the terminals and drayage operations.

Who will be the losers in the battle for market share?

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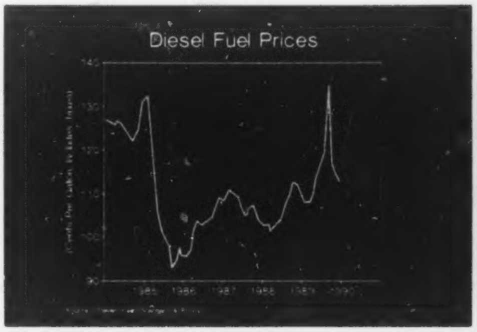


Fuel prices fell quickly after January, but the long-term trend is inching up.

VAN LINES HAVING IT BOTH WAYS

"It ain't easy," says Joseph Ruffolo, regarding his responsibilities as president of North American Van Lines. While the household goods (HHG) side of the business rung up a whopping $25 million in net operating income in 1989, the general freight side showed a *loss* of $25 million.

So how does the largest van line in the country stay on top?

"We are a HHG name in the industry, but we're more than a HHG carrier. The money we spent on the van line side in HHG and high-value products in the 80s has resulted in a very strong quality-minded agency family," says Ruffolo. With over 800 agents in the U.S. alone and about 400 worldwide, the company enforces strict quality standards and monitoring programs to track warehouse quality, on-time pickup and delivery and customer satisfaction levels.

Ruffolo was assigned to his post at NAVL to troubleshoot problems on the truckload side. Problems existed, he says, because "the truckload side failed to make the market changes necessary in the 80s to prepare for the 90s." For example: converting from owner operators to employees, which results in a higher utilization of fleet and equipment, more miles and loads per vehicle per year, less deadhead miles and lower overhead costs.

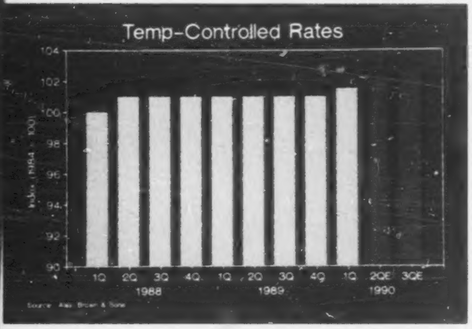
The company instituted a "10 in 2" program in April of 1989—a plan that enables NAVL to accomplish in two years what the industry has accomplished in 10 years. Since the program's inception, "we have added over 1,400 employee drivers to our fleet, purchased 1,000 new trailers and 800 new tractors, and have developed a series of systems programs that are just now coming on-line," says Ruffolo. "These additions are catapulting us into the 90s with the type of fleet and operations that we need."

Norfolk Southern, NAVL's parent company, considered selling the van line several years ago, but changed its mind. Ruffolo says his guess is that NS is looking strategically at providing full-service capabilities to its customers, and that the "full truckload problems are not insurmountable."

Ruffolo also attributes the 1989 TL loss to the fact that the company is "spending enormous amounts of money on this new equipment, systems development and shorter depreciation schedules" to get back on track.

Halfway through the "10 in 2" program, Ruffolo expects to see the real impact by the third quarter of next year. His vision for the future: "To be a unique worldwide transportation and distribution company, offering an array of value-added services to customers worldwide."

—Theresa M. Steltzer



Reefer carriers are increasing rates slowly but steadily as demand allows.

Larkin says that larger carriers will continue to take freight from smaller carriers that are abandoning business to concentrate on niches. Truckload as well as intermodal operators will seek additional private carrier conversion. In addition, consolidation in the truckload business remains an ongoing process, as evidenced by the recent departures of Riss International, Brown and other truckload operations, which left (in their respective wakes) a substantial volume of trailerloads up for grabs.

Other new truckload traffic continues to come from the LTL sector. Truckload carriers will continue to grow at the expense of the LTL carriers, largely through collection and distribution services, notes Larkin.

"Truckload carriers now very effectively perform multiple pick-up and multiple drop-off type movements, which in many cases can be direct substitutions for LTL service," says Larkin. "Also, some carriers and shippers are banning together to link regional LTL operators with truckload service, thereby providing basically the same service at lower costs."

While the consolidation is expected to continue, there's little chance that shippers will see a replay of the consolidation in the LTL industry.

"There will be some megacarriers, but there still will be plenty of room for regional, equipment and even service specialists," says Larkin. "The market simply is too big and there are too many niches for the truckload industry to end up like the LTL business where the Big Three reign." However, the truckload survivors either will have to be big generic carriers or niche specialists, he adds.

Shippers can expect to see rate increases in the coming months, particularly in the long-haul lanes where rates are so depressed that virtually nobody is making any money. Longhaul rate increases are certain to outpace increases in shorter haul lanes where rates are healthier and increases will be more modest.

"Truckload carriers are trying to establish among the shipping communities a mindset that for the carriers to stay healthy in the long term, they need some kind of annual rate adjustment," says Larkin. The size of those increases may be only a few cents per mile, but that is a considerable change over the 2 to 4 percent decreases shippers have enjoyed over the past years, he notes.

"Carriers, as do many of the larger, more sophisticated shippers, realize that increases are needed if for no other reason than to eventually replace assets," says Larkin. "However, there remain a sizeable number of rate-bashers that are slow to turn."

Nonetheless, shippers in all likelihood will continue to get high-quality service for about the same price as they paid in 1989, maybe even a better value, once rates are adjusted for inflation, he adds.

Shippers Squeeze Tank Truckers

The tank trucking industry experienced a severe drop in profitability in 1989. Of the 11 top carriers, 10 suf-

continued

REFRIGERATED CARRIERS

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	KLLM	$115.75	$97.41	+18.83	6.71	8.39	-20.02	94.20	91.40	-2.80
2.	FFE	107.21	88.70	+20.87	3.28	4.41	-25.62	96.90	95.00	-1.90
3.	National Carriers (KS)	73.02	68.12	+7.19	2.97	2.11	+40.76	95.90	96.90	+1.00
4.	Willis Shaw	57.09	51.98	+9.83	5.91	5.13	+15.20	89.60	90.10	+0.50
5.	Alterman	54.27	54.51	-0.44	0.43	0.15	+186.67	99.20	99.70	+0.50
6.	Ryder Temp Control	44.38	57.18	-22.39	-6.38	-4.56	-39.91	114.40	108.00	-6.40
7.	Altruk	38.62	56.76	-31.96	-2.03	n/a	n/a	105.20	n/a	n/a
8.	Pirkle	25.70	29.25	-12.14	-0.36	-0.84	+57.14	101.40	102.90	+1.50
9.	Refrigerated Transport (TX)	25.12	23.40	+7.35	1.03	1.07	-3.74	95.90	95.40	-0.50
10.	Goodway	23.00	18.44	+24.73	1.08	1.00	+8.00	95.30	94.60	-0.70

Source: ICC/Transportation Technical Services

fered drops in operating income.

The culprits are competition, overcapacity and inability to raise rates, according to Cliff Harvison, executive director of the National Tank Truck Carriers Conference.

"The tank truck industry deals primarily with a relatively small number of very large energy and chemical shippers. These shippers have tremendous buying power and therefore tremendous leverage over the tank truck industry. The shippers dictate price, and that price is not enough to allow tank carriers to earn an adequate profit," says Harvison.

Overcapacity continues to depress rates as well. The actual number of tanks has not changed significantly during the past decade, but the utilization of tanks has nearly doubled since deregulation.

"Limited operating authorities in the pre-deregulation era meant tank trucks usually had empty backhauls," says Harvison. "Now, as long as the tank can be cleaned properly, carriers can obtain a backhaul load."

Thus deregulation has been a mixed blessing for tank carriers. They can increase revenue miles, but they also are finding themselves with tremendous overcapacity that depresses rates.

Even with this overcapacity, tank truck carriers are having to think seriously about purchasing new equipment because of the increasing age of their fleets. Many carriers are still running tanks that are 15 years old or more. Replacements cannot be put off much longer, but many carriers do not have the profitability to justify major capital expenditures.

If the cost pressures on tank truck carriers were not bad enough, the Department of Transportation is readying regulations that will further burden the industry.

Proposed regulations in docket HM-183 would require considerable increases in maintaining, testing and inspection of tanks. Harvison estimates these regulations would add 30 percent to the annual cost of running every tank trailer in a carrier's fleet.

"The cost pressures on the tank truck industry just continue to climb, but the carriers cannot get their major customers to pay the higher rates needed to cover these increased costs," concludes Harvison.

HHG Carriers Inch Ahead

At first glance, 1989 looked like a tremendous year for the household goods (HHG) industry. Revenues for the major carriers were up substantially. Net operating incomes increased by one-third to one-half for many carriers. But according to Charles C. Irions, president of the American Movers Conference, these figures tell only half the story.

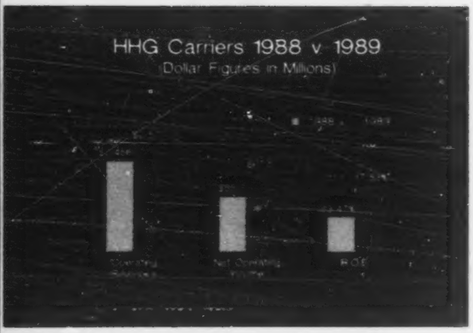
"In terms of revenue, 1989 was the biggest year in the industry's history. The top 15 van lines' operating revenues were 4.7 percent ahead of 1988, which showed a 5.1 percent increase over the previous year. However, the net profit before taxes was absolutely flat, a paltry 3 percent.

continued

TANK TRUCK CARRIERS

	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	Matlack	$214.49	$227.69	-5.80	$2.28	$6.85	-66.72	98.90	97.00	-1.90
2.	Chemical Leaman	207.36	214.42	-3.29	5.52	6.14	-10.10	97.30	97.10	-0.20
3.	Montgomery Tank Lines	105.52	92.75	+13.77	9.39	7.95	+18.11	91.10	91.40	+0.30
4.	Koch Service	92.56	91.96	+0.65	12.64	17.82	-29.07	86.10	80.60	-5.50
5.	Trimac Transport	80.21	62.13	+29.10	n/a	n/a	n/a	95.20	n/a	-95.20
6.	Groendyke Transport	79.51	76.38	+4.10	3.34	4.62	-27.71	95.80	93.90	-1.90
7.	DSI Transports	72.33	69.57	+3.97	6.16	5.98	+3.01	91.50	91.40	-0.10
8.	Miller Transporters	70.30	74.05	-5.06	-1.09	2.32	-146.98	101.50	96.90	-4.60
9.	Jack Kelly Inc.	54.27	45.38	+19.59	-0.17	0.28	-160.71	100.30	99.40	-0.90
10.	McKenzie Tank Lines	51.86	49.35	+5.09	3.06	2.89	+5.88	94.10	94.10	0.00
11.	Central Transport (NC)	51.09	52.40	-2.50	3.70	3.70	0.00	92.80	92.90	+0.10

Source: ICC/Transportation Technical Services
Data not available for Bulk Materials



HHG before-tax financial performance in 1989 improved significantly.

"The situation becomes even worse when you look at the profit after taxes for 1989," says Irions. "It was down to $22 million from $25 million the year before. That's a $22 million after-tax profit on more than $2.5 billion in revenue from the top fifteen van lines. That translates into an anemic 0.9 percent profit."

These numbers point to the obvious conclusion that movers are not pricing their services at a level where they can make a reasonable profit. The longer this continues through the decade, the more difficulty many companies will have remaining solvent.

Many of these low profit margins also result from the effect of a general economic shakeout that is occurring in the industry. Leveraged buyouts and the extraordinary debt they have created are forcing some company executives to make short-term economic decisions instead of planning for long-term development as they would prefer.

There has also been an abnormal turnover in van line top management, much of it related to LBOs. We are continuing to see competition, tight markets and tight money take their toll, with a minimum number of small- and medium-sized agents and small independent movers going bankrupt or leaving the business. However, most industry people agree that a relatively large number are in serious trouble.

"As these conditions continue, we will see an accelerated pace of closures and mergers. Successful super agents are emerging with multiple locations, streamlined operations and economies of scale. Certainly the strong and progressive will survive," says Irions.

Beside the financial performance of the HHG industry, Irions sees several other factors reshaping the HHG industry in the next few years.

The military market, a cornerstone of the HHG industry since World War II, is quickly shrinking. "The military market is about 15 percent of our business," says Irions. "With the huge federal deficit and shrinking budget, and with the diminished Soviet threat in Eastern Europe, military spending is bound to decrease throughout the decade."

One bright spot on the horizon is the international movement of household goods. "The outbreak of peace will open up tremendous world markets. It could very well mean that the decade of the 1990s stands a good chance of being the most prosperous in the century.

"This decade will be the most crucial period in the 20th century for moving companies to make it or lose it economically," says Irions. "The end of the decade will find many moving companies enjoying unprecedented prosperity, while many others may experience failure." ■

HOUSEHOLD GOODS CARRIERS

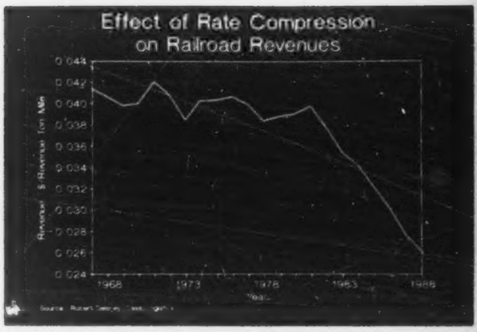
	Carrier	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 O.R.	1988 O.R.	Change
1.	North American Van Lines	$559.46	$540.41	+3.53	$25.69	$20.02	+28.32	95.40	96.30	+0.90
2.	United Van Lines	452.75	425.62	+6.37	4.68	0.90	+420.00	99.00	99.80	+0.80
3.	Allied Van Lines	405.97	383.63	+5.82	10.16	6.48	+56.79	97.50	98.30	+0.80
4.	Mayflower Transit	320.45	309.81	+3.43	9.68	11.29	-14.26	97.00	96.40	-0.60
5	Bekins Van Lines	194.18	196.17	-1.01	-3.89	-5.73	+32.11	102.00	102.90	+0.90
6.	Atlas Van Lines	192.72	186.39	+3.40	13.43	3.82	+251.57	93.30	98.00	+4.70
7.	Burnham Van Services	93.32	96.14	-2.93	5.09	8.62	-40.95	94.50	91.00	-3.50
8.	Graebel Van Lines	84.15	66.87	+25.84	0.53	0.34	+55.88	99.40	99.50	+0.10
9.	Global Van Lines	60.76	58.61	+3.67	1.16	0.94	+23.40	98.10	98.40	+0.30
10.	Paul Arpin Van Lines	50.65	42.45	+19.32	1.09	0.71	+53.52	98.20	97.90	-0.30
11.	Wheaton Van Lines	47.15	48.48	-2.74	1.40	2.69	-47.96	97.00	94.40	-2.60
12.	New World Van Lines	37.42	29.13	+28.46	1.67	1.06	+57.55	95.50	96.30	+0.80
13.	American Red Ball Van Lines	24.70	27.21	-9.22	-0.18	-0.77	+76.62	100.70	102.90	+2.20
14.	National Van Lines	31.75	23.51	+35.05	-0.31	-0.26	-19.23	100.00	101.10	+1.10

Source: ICC/Transportation Technical Services

For railroads, a cloudy crystal ball

Rail carriers had a weak second half in 1989 that will be easy to improve on in 1990. But better numbers this year won't make the industry's problems go away.

By Kurt Hoffman, Contributing Editor



Railroad revenue per ton-mile has plummeted as a result of lower rates.

Following a weak introduction into the new decade, second and third quarter numbers for 1990 will look good in terms of year-to-year comparisons for the nation's freight railroads. However, the anticipated gains will be deceptive because of the sub-par performance recorded in the latter half of 1989.

The third and fourth quarters of 1989 were rough times for rail traffic, as volumes were down 4 percent compared to the same period in 1988, notes Graeme A. Lidgerwood, an industry analyst with First Boston.

"We're coming into a period where even if the economy is not booming, the comparisons will look pretty favorable," she points out. Lidgerwood projects that rail traffic in the third quarter will be up about 4 percent compared to 1989 statistics.

Cars and Coal

The change in fortune for the industry is tied to a couple of things, says Lidgerwood. Coal traffic has re-

continued

MAJOR RAIL SYSTEMS

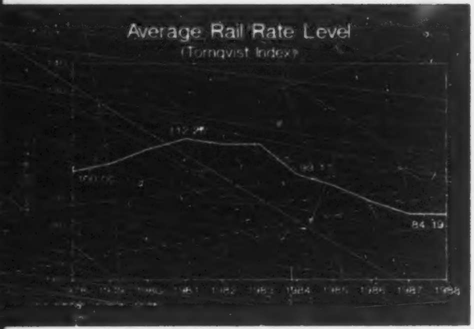
	Railroad	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 R.O.I.	1988 R.O.I.	Change
1.	Burlington Northern	$4606.29	$4499.07	+2.38	$473.08	$498.78	-5.15	12.02%	12.64%	-0.62
2.	Union Pacific	4435.93	4295.17	+3.28	540.13	557.87	-3.18	10.01	11.54	-1.53
3.	CSX Transportation	4345.75	4442.81	-2.18	324.47	-86.14	+476.68	5.02	0.00	+5.02
4.	Southern Pacific Lines*	2270.98	2240.05	+1.38	-111.83	-117.47	+4.80	n/a	n/a	n/a
5.	Consolidated Rail	3323.84	3408.25	-2.48	117.75	288.23	-59.15	2.09	5.21	-3.12
6.	Norfolk Southern	3694.08	3616.65	+2.14	525.58	592.95	-11.36	10.91	12.43	-1.52
7.	Atchison, Topeka & Santa Fe	2201.97	2140.11	+2.89	-137.05	130.03	-205.40	0.00	4.51	-4.51

***Includes figures reported to ICC for Southern Pacific and Denver & Rio Grande Western**

REGIONAL RAIL SYSTEMS

	Railroad	1989 Revenue	1988 Revenue	% Change	1989 N.O.I.	1988 N.O.I.	% Change	1989 R.O.I.	1988 R.O.I.	Change
1.	Chicago Northwestern	$812.18	$860.40	-5.60	$48.21	$28.55	+68.86	4.58%	2.75%	+1.83
2.	Illinois Central	547.04	556.39	-1.68	81.14	19.96	+306.51	8.42	2.25	+6.17
3.	Soo Line	539.21	550.38	-2.03	-19.94	25.25	-178.97	0.00	3.91	-3.91
4.	St. Louis Southwestern	393.57	387.61	+1.54	6.67	7.67	-13.04	1.61	12.43	-10.82
5.	Grand Trunk Western	327.05	324.96	+0.64	1.32	1.40	-5.71	0.45	0.44	+0.01
6.	Kansas City Southern	315.41	310.56	+1.56	38.33	70.47	-45.61	9.90	21.23	-11.33
7.	Florida East Coast	142.65	141.26	+0.98	7.64	13.25	-42.34	8.15	4.51	+3.64
8.	Boston & Maine	82.39	65.56	+25.67	3.40	-12.06	-128.19	5.14	0.00	+5.14

Source: ICC



Rates dropped in 1988 for the 7th year in a row, remaining below 1980 levels.

mained strong, and automotive volumes showed evidence of a turnaround early in June as volumes were up approximately 2.9 percent compared to the same period in 1989.

Coal traffic accounts for nearly 38 percent of railroad car loadings. However, rising environmental concern, as well as pending acid rain legislation, probably will produce some shifts in the origination and destination points of coal shipments. Utilities are shifting away from high-sulphur coal reserves, thus placing a premium demand on low-sulphur coal, most of which originates in Western states. Eastern carriers losing out on originated carloads of Appalachian coal will try to make it up on their respective handling of interline shipments.

The future is less than rosy for construction-related commodities such as glass, lumber and forest products, stone and clay, due to the predicament in the housing industry.

Of the factors currently clouding the railroad horizon, labor essentially remains the only category where the carriers have any semblance of control over their destiny. However, that control largely has been defaulted to a presidential emergency board appointed to weed out labor and management differences over the health, welfare and productivity issues that have stalemated contract negotiations. The board is expected to issue recommendations early this fall.

Although few people are taking bets on the outcome, the board's recommendations are critical to the railroad's game plan. Labor and fringes currently constitute 45 to 50 percent of rail revenues, and that cost factor takes on even greater significance in light of the truck size and weight gains anticipated in the next highway authorization bill. If truckers succeed in their efforts to gain nationwide authority to operate triple 28-foot pups and/or double 45- or 48-foot equipment, then productivity issues like crew sizes, mileage days and other work rules will leap to the forefront of management concern.

Promising Intermodal Business

Whereas booming international traffic was responsible for healthy intermodal growth in previous years, quality service will be the key to attracting new intermodal business in the 1990s. Intermodal service clearly represents the best opportunity for railroads to gain some market share, and all of the Class Is

continued

BN's BALANCED APPROACH TO GROWTH

By all indications, Burlington Northern's star will continue to rise both as a service railroad and an investor attraction for two fundamental reasons. With access to sizeable reserves of low-sulphur coal in Western states, BN stands to be the primary rail beneficiary of probable acid rain legislation. Consequently, investor attraction continues to increase.

"The other big positive for BN lies in the nature of its traffic mix," says Graeme Lidgerwood of First Boston.

"At a time when other carriers are concerned about fluctuating auto and slumping steel production, BN's exposure to those industries is almost nil," she says. "They have a very defensive traffic mix, with almost 50 percent of their revenue coming from coal and grain, which are relatively noncyclical."

Burlington is one of the few railroads that has shown year over year improvement in its traffic volume, she adds. "There's a tremendous amount of focus at BN on the bottom line and on maximizing operating cash flow, because they have been left with a relatively leveraged balance sheet, and they are very anxious to pay down as much debt as they can over the next several years to bring down their debt-to-total capital ratio to 50 percent." In addition, BN's certificates of transportation (COTS) program for railroad covered hopper cars — kind of a future grain market — appears to be working well, and the railroad continues to be aggressive in the intermodal area.

"There's a very real understanding among the railroads that they must provide truck-competitive service, not necessarily in transit time but at least in terms of reliability," Lidgerwood adds.

RAILROAD CARLOADS
1988 v. 1989

RAILROAD	1989 TOTAL	1988 TOTAL	% CHANGE
Class 1			
CSX Transportation	4,657,667	4,826,982	-3.5
Norfolk Southern	3,192,428	3,236,582	-1.4
Burlington Northern	3,096,794	3,079,548	+0.6
Union Pacific	3,085,040	3,338,900	-7.6
Conrail	2,571,471	2,654,515	-3.1
Southern Pacific Lines*	1,425,495	1,377,503	+3.5
Chicago Northwestern	1,374,090	1,415,477	-2.9
Illinois Central	815,979	794,307	+2.7
Soo Line	608,231	612,127	-0.6
Grand Trunk Western	474,157	481,284	-1.5
Kansas City Southern	377,080	384,632	-2.0
St. Louis Southwestern	373,786	333,691	+12.0
Florida East Coast	163,130	178,004	-8.4

*** Includes Denver & Rio Grande Western**
Source: AAR

REGIONAL RAILROAD
RAILROAD CARLOADS 1988 v. 1989

RAILROAD	1989 TOTAL	1988 TOTAL	% CHANGE
Non-Class 1			
Duluth, Missabe & Iron Range	340,446	276,313	+23.2
Paducah & Louisville	185,333	154,472	+20.0
Monongahela	179,347	184,539	-2.8
Elgin, Joliet & Eastern	171,446	193,846	-11.6
Wisconsin Central	146,406	133,078	+10.0
Lake Superior & Ishpeming	145,435	135,528	+7.3
Bessemer & Lake Erie	124,092	132,838	-6.6
Richmond, Fred. & Potomac	112,767	113,936	-1.0
Birmingham & Southern	92,451	57,259	+61.5
Pittsburgh & Lake Erie	60,720	62,576	-3.0
Bangor & Aroostook	56,702	56,722	0.0
Apalachicola Northern	47,323	41,122	+15.1
Chicago & Illinois Midland	41,096	58,513	-29.8
Texas Mexican	38,212	34,770	+9.9
Green Bay & Western	28,616	28,997	-1.3
Pittsburgh & Shawmut	23,013	22,221	+3.6
Genesee & Wyoming	15,182	20,124	-24.6
Cambria & Indiana	14,408	17,790	-19.0
Trona	13,983	14,626	-4.4

Source: AAR

continued

as well as many of their smaller brethren have instituted detailed game plans designed to boost the attractiveness and profitability of their intermodal operations.

After years of lip service, marketing (read *shipper*) concerns finally are taking priority over operations considerations. For most railroads involved in intermodal service, ride quality, equipment flexibility, door-to-door service, and claims processing are primary areas of focus. While third parties continue to play an integral role in the intermodal arena, several railroads are making efforts to get closer to the actual customers.

The intent, says one railroad executive, is to provide the kind of reliable high-quality service that can support rate increases and produce some profitability.

For most of the Class Is, a foremost priority has been converting piggyback trailer service to double-stack service to take advantage of the volume economies of double-stack and the superior ride quality. Increasingly widespread use of articulated spine cars, capable of carrying containers and trailers while providing ride quality comparable to that of double-stack, is in evidence where the traffic mix warrants.

Shippers also should be encouraged by the development of new double-stack service to Mexico, which not only allows access to additional markets, but also enables U.S. manufacturers to incorporate, through subsidiary and partnership arrangements with Mexican operations, the advantages of low-priced labor for assembly and production operations.

Intermodal claims procedures also are changing. After Conrail stepped out with a new claims program that allowed shippers to load intermodal trailers and containers according to standard loading procedures used by truckload carriers, Union Pacific followed with comprehensive changes in its claims management approach. In addition to reducing its claims circulars from 15 to three pages, UP no longer requires shippers to prove railroad culpability in order to pay freight loss and damage claims. Southern Pacific Lines reportedly plans to adopt a similar intermodal claims program, and several other carriers are evaluating ways to convert their existing methods of handling claims programs to more marketing-oriented approaches. CSX and CSL Intermodal now offer EDI processing of intermodal claims, and initial results have been encouraging.

Add to this some ambitious plans for intermodal tank cars, 48-foot reefer containers and 28-foot intermodal trailers with trials planned by BN America and UPS, and 1990 should prove to be a year of transition for intermodal service. ■

For most of the Class Is, a foremost priority has been converting piggyback trailer service to double-stack service to take advantage of the volume economies of double-stack and the superior ride quality.

INTERMODAL TRAFFIC
1988 v. 1989

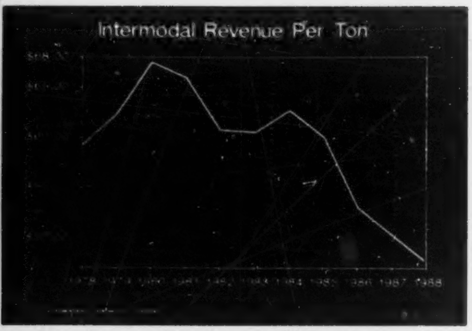
	TOTAL UNITS			CONTAINERS			TRAILERS		
Railroad	**1989 Total**	**1988 Total**	**% Change**	**1989 Total**	**1988 Total**	**% Change**	**1989 Total**	**1988 Total**	**% Change**
Conrail	1,144,231	1,100,849	+3.9	523,232	458,299	+14.2	620,999	642,550	-3.4
Burlington Northern	1,118,931	1,024,664	+9.2	523,167	451,281	+15.9	595,764	573,383	+3.9
Atchison, Topeka & Santa Fe	970,148	893,650	+8.6	275,962	235,694	+17.1	694,186	657,956	+5.5
Union Pacific	929,342	910,939	+2.0	510,331	429,022	+19.0	419,011	481,917	-13.1
Southern Pacific Lines	926,896	822,893	+12.6	582,710	474,423	+22.8	344,186	348,470	-1.2
Norfolk Southern	810,118	677,154	+19.6	321,806	250,770	+28.3	488,312	426,384	+14.5
CSX Transportation	716,810	872,486	-17.8	322,004	391,243	-17.7	394,806	481,243	-18.0
Chicago Northwestern	524,132	n/a	n/a	505,838	n/a	n/a	18,294	n/a	n/a
St. Louis Southwestern	404,123	341,956	+18.2	259,792	213,142	+21.9	144,331	128,814	+12.0
Florida East Coast	377,068	346,076	+9.0	13,127	7,721	+70.0	363,941	338,355	+7.6
Soo Line	166,976	201,788	-17.3	63,780	135,830	-53.0	270,938	279,473	-3.1
Grand Trunk Western	93,246	83,372	+11.8	24,780	26,189	-5.4	68,466	57,183	+19.7
Kansas City Southern	71,202	70,032	+1.7	23,960	22,877	+4.7	47,242	47,155	+0.2
Wisconsin Central	12,163	10,461	+16.3	3,917	5,353	-26.8	8,246	5,108	+61.4

Source: AAR

Intermodal agents face tough choices

Railroads are rethinking their relationships with intermodal retailers, spurring a rush by these companies into premium transportation. The question is, is it too little too late?

By Kurt Hoffman, Contributing Editor



Service, not price, will be the critical factor in attracting new intermodal business in the 1990s, with annual growth ranging from 3 to 4 percent.

It's crunch time for the nation's intermodal marketing companies. Gone are the high-growth years of the 1980s, and survival for most of the third-party marketers of intermodal services essentially depends on each company's ability to make the transition from being a secondary, overflow source of transportation to a provider of premium transportation services.

There are a lot of exceptions to this general analysis. Of the 100-plus active third-party companies, approximately 80 percent are regional and/or specialized operations with annual revenues of less than $20 million. Most of these are small shops with only a few employees, and they depend on a handful of accounts where a long-standing relationship exists between the agent and the respective traffic managers. It's the kind of business that can go out the window with a change of personnel.

But for the biggies, it's gut-check time. With their railroad partners growing increasingly impatient at the slow pace of cracking the premium freight market (witness the emergence of Quantum and Conrail Mercury, for example), the heat is on the third parties to shift gears and tackle new markets head-on. Virtually all the Class I railroads have evaluated their sales relationship with the third-party industry during the past 12 months, and insiders suggest that some carriers have established internal goals for third party performance.

"Even though we're becoming increasingly involved with the Fortune 500 companies, we're still hauling their warehouse freight—with a few exceptions," laments a frustrated intermodal executive. "For the most part, we're not hauling the direct stuff or the higher value freight, and that simply is an unacceptable situation that we need to rectify. And it will be rectified."

Several third parties have made modest, yet significant inroads into the premium market in the past year. These guaranteed door-to-door services, with transit times competitive with truckload delivery, attract new business and produce higher revenue yields. Leading the charge are familiar names—American President Delivery Systems, The Hub Group, Alliance Shippers—although smaller regional operators also have found success in the premium door-to-door market.

Still, several persistent problems present difficult dilemmas for intermodal marketers and inhibit their ability to move into the premium service market. These problems are largely a result of the industry's commission sales approach and loosely managed drayage.

A commission sales force that grew comfortable—and profitable—buying freight through heavy discounting during the high economic growth (8 to 10 percent) years of the 1980s will find the going substantially tougher in the 1990s, where annual growth should be closer to the 3 to 4 percent range and where service, not price, will be the critical factor in at-

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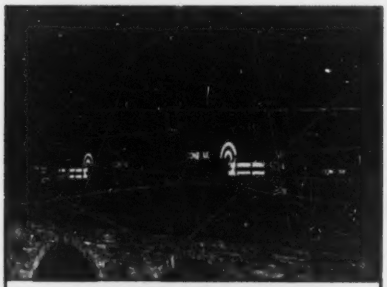


A SMALLER SLICE

At nearly every intermodal conference a consultant invariably throws up a slide showing a big pie chart representing a $200 billion market for intermodal transportation, and a truckload market share of $140 to $150 billion. There should be some easy pickings there, right? Not necessarily, says Conrail's John Sammon.

"We all look at that chart and say 'Boy, if we could just shave off a little here and a little there, we could really be turning some numbers,' " says Sammon. "But that's not reality."

So look at the pie chart again. Filter out all the business that moves less than 400 miles, then subtract all but the dry van market. Remove the loads located in areas inconvenient to rail lines and where competitive service commitments would be impractical. Then shave off all multiple drop loads. What you have left is the relevant market. In Conrail's case, it's about $6 billion—a far cry from $150 billion.

tracting new business.

"In the 1980s, you grew just by being in the market," notes John Sammon, assistant vice president of intermodal marketing and sales at Conrail. "With an economy that is growing, you can be an overflow carrier. You can be the second guy in the door, the guy who provides second rate service, and you'll grow. But when the economy slows down, the overflow guys go first."

The rest of the pack is left with two choices: They can either attack new markets, or they can try to live off existing business and fight off competitors that attempt to woo, with price or service incentives, specific accounts that would fit nicely in the competitor's load balance equation.

In light of the severe profit erosion caused by doublestack-truckload competition in the primary long-haul lanes, intermodal marketers are going to have to aim their sights at the same secondary, regional markets that truckload carriers turned to when doublestack competitors invaded the long-haul lanes. To capture market share from the highway in these lanes, intermodal service will have to be consistent, door-to-door, low-damage and price-competitive.

Therein lies the challenge, and the destiny, for intermodal marketers. For many third-party executives, it is a perplexing dilemma involving conflicting concerns.

On one hand, the third parties feel the industry jointly must raise the shippers' image of intermodal transportation as a low service, low cost alternative to truckload movements.

Other shipper agents feel the only answer to continued growth of their business will come from raising the service standards of their own operations, thereby differentiating themselves from the generic image of intermodal operators.

The result seems to be that individual third-party operators are forging ahead with their own marketing programs. Railroads, too, have again entered the marketplace with intermodal programs. For example, the emergence of the Quantum and Conrail Mercury operations has put some heat on the third parties, several of which are responding with intriguing door-to-door offerings that warrant consideration from traffic managers who currently bypass the intermodal option or use it only for moving warehouse stock.

As these more progressive third parties broaden their marketing and expand into new service programs, shippers stand to benefit. The losers will be the agents that continue to steal each other's freight for five bucks off the drayage fee. ■

Many shipper agents feel the only way to grow their business is to raise the service standards of their own operations, differentiating themselves from the generic image of intermodal operators.

Top Intermodal Marketers

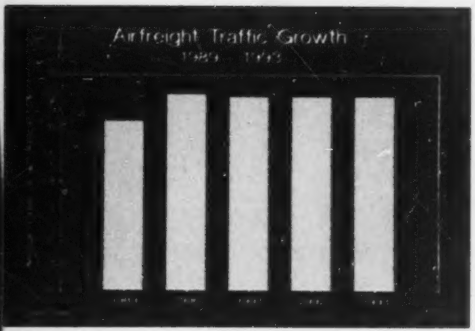
	Company	**1990 Revenues (Estimated)**
1.	American President Distribution Systems (Oakland, CA)	$240 million - $250 million
2.	Alliance Shippers (West New York, NJ)	$220 million - $240 million
3.	The Hub Group, Inc. (Downers Grove, IL)	$220 million - $240 million
4.	GST Corp. (Memphis, TN)	$150 million - $175 million
5.	ITOFCA Consolidators (Downers Grove, IL)	$120 million - $130 million

Source: Kurt Hoffman

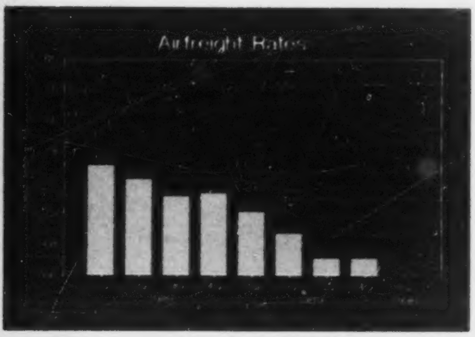
Airline interest in airfreight rises

Combination passenger-cargo airlines again take an interest in air cargo to boost their sagging bottom lines.

By Thomas A. Foster, Editorial Director



The 1989 worldwide traffic growth rate is expected to grow from 6.3% to 7.3% in 1990, and 9.8% by 1998.



The most volatile airfreight rates have been for express packages where pricing is still used to gain market share.

The domestic airfreight industry in 1989 continued to be dominated by the integrated carriers such as Federal Express and United Parcel Service. Fed Ex alone accounted for more cargo revenues ($6.3 billion) and ton miles (4.4 billion) than all of the combination passenger-cargo airlines put together.

With a few notable exceptions, cargo represented only a few percentage points of total revenue for the combination carriers. Among the top 10 U.S. scheduled combination airlines, only Northwest reported freight revenues approaching 10 percent of total revenues.

But these figures do not reveal what appears to be an increasing interest on the part of the combination airlines in airfrieght.

According to Larry Burtchaell, executive director of the Air Courier Conference of America, the combination airlines are becoming more and more interested in air cargo's profit potential.

"Airline managements are giving careful attention to air cargo because in most cases it is incremental revenue and profit to the airline," says Burtchaell, who served as a cargo executive for Pan American for 30 years. "U.S. airline executives are looking enviously at the airfreight profits certain carriers are racking up, especially the foreign carriers."

Last year was not a very profitable year for U.S. combination airlines. Only three of the major carriers and their parent companies—Northwest, Soutwest and Alaska Airlines—saw their profit margins increase. In each case, air cargo profits added significantly to the bottom line.

"The combination carriers have always blown hot and cold on cargo depending on other priorities, and that is the problem," says Burtchaell. "They have limited planning horizons, and cargo requires a long-term commitment. But are airline managements willing to invest in support functions, personnel, aircraft and other necessary elements for air cargo to prosper? "

Several airlines are clearly moving in the right direction. American Airlines, for instance, has invested heavily in its cargo operations for several years. As a result, last year American had a 30 percent increase in cargo ton miles.

"With the wave of mergers, leveraged buyouts and other distractions behind them, the combination airlines may again have the time and interest in becoming serious about cargo," says Burtchaell.

"Heavyweight cargo rates are going up due to ever-increasing demand," he says. "This trend certainly is attracting the attention of all airlines. Some U.S. airlines may invest in cargo business much like Japan Airlines and Lufthansa are investing in DHL."

Larry Rodberg, president of Eden Air Freight in Irvine, Calif., believes the combination airlines will become a greater factor in the air cargo industry. According to a survey conducted by Eden, the combination

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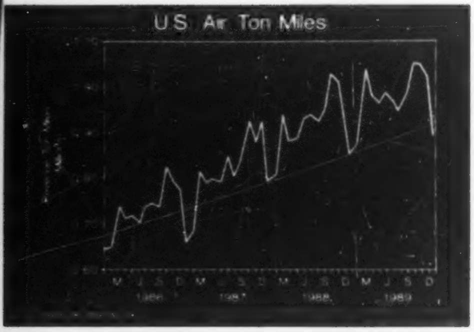


Airfreight and air express volumes have been erratic, but the trend line is clearly going up.

carriers in the U.S. are planning to purchase 2,132 aircraft in the next five years, which will add considerable lift that must be filled. In addition, Boeing Aircraft claims they will increase their production of 747 all-cargo freighters to an estimated 610 by the year 2005. Boeing has only manufactured 130 to date.

"All of these new aircraft will have a great amount of space for cargo below their passenger decks," says Rodberg. "At present, only 25 to 30 percent of the combination passenger cargo scheduled aircraft is being utilized," he adds.

"The incremental value of flying both passengers and freight creates an advantage the 'flying' forwarders cannot have," says Rodberg. "Forwarders in partnership with the scheduled airlines will, without question, control the pricing of air cargo worldwide through the utilization of these incrementally valued combined services."

The most detailed forecasts for the growth of airfreight carried by the scheduled airlines are made by the International Air Transport Association (IATA) based in Geneva, Switzerland.

According to IATA, the worldwide airfreight growth rate of 6.3 percent recorded in 1989 will increase more rapidly starting in 1990, when the growth rate should hit 7.3 percent and eventually climb to an annual rate of 9.8 percent through 1998.

Imbalances in directional demand will continue to shift depending on

continued

AIR CARRIERS RANKED BY 1989 CARGO REVENUE
(000 Omitted)

Carrier	Cargo Revenue	Total Revenue	Cargo As % of Total Revenue	Revenue Ton Miles
Federal Express	6,287,372	6,563,972	95.79%	4,413,806
United Parcel Service	648,781	650,377	99.75%	1,439,294
Northwest	575,572	6,553,827	8.78%	1,671,951
United Airlines	388,271	9.641,887	4.03%	1,006,579
Delta Airlines	287,627	8,648,315	3.33%	518,791
American	255,640	9,960,947	2.57%	637,955
Pan Am	191,176	3,611,853	5.29%	727,645
Continental	149,135	4,944,226	3.02%	520,108
TWA	147,849	4,507,348	3.28%	493,566
Evergreen	127,629	211,334	60.39%	408,797
Southern Air Transport	107,868	145,599	74.09%	272,811
US Air	76,083	5,858,371	1.30%	98,626
World	55,067	173,639	31.71%	229,163
Alaska	40,517	926,596	4.37%	42,229
Eastern Airlines	29,918	1,551,678	1.93%	71,438
Markair	26,353	108,559	24.28%	19,634
Aloha	18,103	155,085	11.67%	7,964
America West	16,703	998,312	1.67%	28,212
Southwest	13,720	1,015,124	1.35%	2,786
Hawaiian	8,267	348,268	2.37%	9,303
Midway	3,483	463,042	0.75%	2,175
Braniff	3,148	425,661	0.74%	5,963
Air Wisconsin	1,523	178,090	0.86%	238
Westair	1,087	146,312	0.74%	0

Source: I.P. Sharp

worldwide economic trends. For instance, westbound airfreight from Northern Europe to the U.S. East Coast grew only half as fast as eastbound airfreight movements. The U.S. economy was far more robust than Europe's. But as "Europe 1992" approaches and the European economy gains momentum, westbound traffic is expected to grow much faster than eastbound movements.

Similarly, the depreciated U.S. dollar has lowered the cost of goods manufactured in the U.S. compared to those in Japan. Thus, westbound airfreight to Japan is growing rapidly.

The U.S. domestic and North Atlantic freight markets are currently the top two in the world. Growth is forecast to increase until 1998 at annual rates, 6.1 percent and 6.9 percent respectively. From 1998 to 2010, these markets will slow to around 6 percent.

According to IATA, these below-average growth rates reflect the large size of the markets, falling yields to the carriers and slowing growth relative to Asia.

The fastest growing airfreight routes are within the Far East. For the next decade, airfreight will grow by 15.3 percent thereby doubling the volume of traffic in less than six years. Between 1998 and 2010, the growth rate will fall back slightly to an annual rate of 12.5 percent.

Only slightly behind these areas are the routes across the north and mid-Pacific, which are projected to grow at 13.6 percent annually for the next 10 years. The key to maintaining these growth levels are increasing eastbound lift capacity and removing airport congestion within the Far East. If the growth continues as forecast, by 2010 the routes on the north and mid-Pacific will be the world's busiest airfreight lanes.

IATA expects the Europe-Far East routes to grow 11.3 percent during the 1990s and 10.3 percent the following decade. Initially, traffic growth should be more rapid eastbound, but increasing prosperity in Europe will boost demand for imports and reverse the trend later in the 1990s.

Air cargo will grow at only a 3 to 4 percent rate within Europe, where improving surface transportation and elimination of cross-border delays remove the need to use air for most time-sensitive shipments. ■

NWA: A POWER IN THE PACIFIC

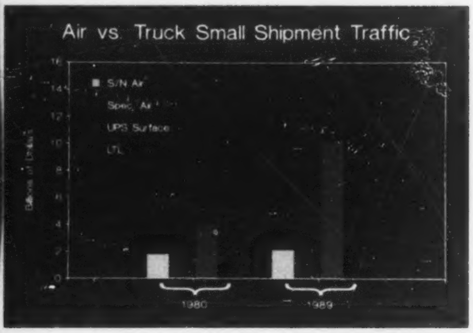
Northwest Airlines has a special place in the U.S. airfreight business: it's the only U.S. combination carrier still flying a dedicated freighter fleet. It's the international airfreight market that makes operation of those eight 747s profitable, says NWA's Vice President of Cargo, Dave Behrends. "If we were running them just domestically, like United and American did, it wouldn't be viable," he admits. Both United and American discontinued freight service in the early 1980s.

"International cargo," Behrends notes, "fills 75 percent of the company's widebody lift." Outbound from the U.S., Japan is Northwest's busiest market. The 32 weekly freighter crossings to Tokyo carry mainly high-tech specialty items, foodstuffs, fruits and vegetables, meat, cigarettes and various American beers. Inbound from Asia, consumer electronics and textiles are the major movers.

Behrends sees Southeast Asia as the fastest developing market for the airfreight business. "Right now, a lot of manufacturing has headed south from Japan and Korea to Thailand, Indonesia and Malaysia." The airline is keeping tabs on Eastern Europe, Behrends says, but the freight isn't there yet. "If we see production facilities opening there, I'm sure we'll look to get in there," he adds.

Growth of the cargo operation, Behrends believes, will be helped by NWA's close relationships with large freight forwarders. "We'll continue working with them, not bypassing them," he says. "Without forwarders we don't have the same reach. We try to provide them the tools to sell a reliable product—efficient terminal operations, fast clearance and tracing."

The company will be adding lift, but the new corporate leadership is still determining what mixture of combi aircraft and freighters is appropriate. Behrends estimates that airfreight contributes between 25 and 35 percent of the airline's annual profit.



Surface modes, specifically UPS and LTL truckers, made big gains in small package revenue in the past decade.

Air express market stays hot

Air and surface express continue their impressive growth. But the stage is set for some eye-popping developments that will affect the viability of carriers and forwarders—and, eventually, the prices you pay.

By Jay Gordon, Executive Editor

Carriers are ailing, market shares are shifting and the way freight moves is changing. About the only thing that remains static about the air express industry is: the market is growing. Figures compiled by the Colography Group consulting firm reflect that the airfreight segment of the market is especially hot. Revenue growth for the overnight package market was 17.7 percent in 1989, and packages shipped on a deferred basis were up 16.5 percent. The *only* category that showed greater growth was overnight envelopes and letters. This market was up a hefty 19.1 percent last year.

"The notion that the fax machine sounded the death knell for air express is just not proving to be true," says Larry Burtchaell, executive director of the Air Courier Conference

continued

FEDERAL EXPRESS: TAKE YOUR BEST SHOT

If you asked one hundred industry executives to name the world's best distribution company, ninety of them would probably say "Federal Express" without even thinking about it. It might take the other ten a little longer to reach the same conclusion. That may not be a scientific survey, but it's a pretty accurate reflection of the Memphis-based carrier's reputation for reliability.

But during 1989 that reputation was put through its toughest test yet. As one express competitor puts it, "Where Federal's armor was always shiny, it's now showing some rust stains." The perception, shared mainly by rivals seeking ways to storm the Fed Ex fortress, is that Federal's merger with Flying Tigers, and its international expansion plans, have left it vulnerable in its core market—domestic express service.

Federal's growth plans have boosted its operating costs higher than those of United Parcel Service and Airborne Express, its main competitors. Regular high-volume users of Fed Ex service were stung by price increases. The Memphis hub was strained to capacity, leading to the formation of regional hubs where complete distribution control is often harder to manage. All these points were thrown like flaming torches at the Memphis castle during the past few months.

"We're not perfect," says Mike Glenn, Federal's vice president of express marketing, "but we've established such a strong reputation for reliability that it's a big deal when we make a mistake. There is no forgiveness for Federal Express—and we don't ask for any."

Is Fed Ex getting too expensive? "Our research shows price is the third factor among shippers' concerns, well behind reliability and shipment status information, which are our strengths," says Glenn.

As for the express carriers pounding at the gates, Fed Ex isn't too worried. "I'd take exception to claims that they've been successful" taking a bigger share of the market, Glenn says. "There's absolutely, positively no one close to Federal Express when it comes to reliable express delivery."

of America (ACCA), whose members include nearly all the major air and ground express carriers.

Burtchaell indicates that another common fallacy is that the ground express market is in rapid decline. In fact, data shows that revenue for domestic surface delivery of envelopes and packages is on the rise; revenue for packages (5 to 70 pounds) was up 9.2 percent in 1989. Shipment growth was slightly lower.

"Ground movement is frequently the fastest way to move time-sensitive material," says Burtchaell. "Shippers certainly do not care whether their material moves by air or surface as long as it is picked up and delivered on time and in good condition."

Business is still very healthy for the two major ground services—United Parcel Service and Roadway Package System—as well as for dozens of local couriers.

continued

COMMERCIAL CARRIER DOMESTIC GROUND ENVELOPE/PACKAGE MARKET GROWTH (Shipments in Thousands)

	Envelopes/ Packages Under 2 lb.	Packages 2 - 5 lbs.	Packages 5 - 70 lbs.	Total All Packages
Total Market				
1986	451,175	496,494	1,307,215	2,254,884
1987	492,517	542,593	1,428,850	2,463,960
1988	524,411	580,173	1,527,233	2,631,817
1989	535,294	605,927	1,604,967	2,746,188
Percent Growth				
1987/86	9.2%	9.3%	9.3%	9.3%
1988/87	6.5%	6.9%	6.9%	6.8%
1989/88	2.1%	4.4%	5.1%	4.3%

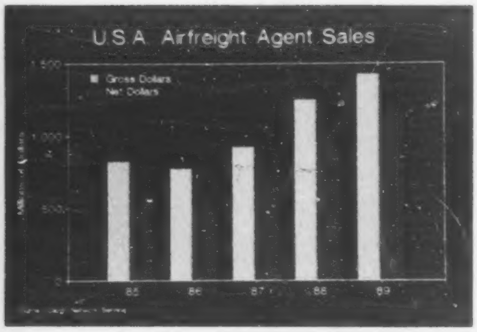
Source: The Colography Group, Inc.

COMMERCIAL CARRIER DOMESTIC GROUND ENVELOPE/PACKAGE MARKET GROWTH (Revenue in Thousands)

	Envelopes/ Packages Under 2 lb.	Packages 2 - 5 lbs.	Packages 5 - 70 lbs.	Total All Packages
Total Market				
1986	810,683	1,025,733	6,090,526	7,926,942
1987	882,815	1,115,729	6,573,604	8,572,148
1988	936,984	1,185,402	7,314,344	9,436,730
1989	982,807	1,262,680	7,983,843	10,229,330
Percent Growth				
1987/86	8.9%	8.8%	7.9%	8.1%
1988/87	6.1%	6.2%	11.3%	10.1%
1989/88	4.9%	6.5%	9.2%	8.4%

Source: The Colography Group, Inc.

The perception that the surface express market is in decline is false. Revenue for envelopes and small packages, especially those in the 5- to 70-pound range, is growing briskly. Shipment growth is slightly slower.



According to CNS, sales for international airfreight forwarders and agents grew 15% last year to $1.4 billion.

With carriers, most notably Federal Express, increasing their rates for air express, most observers believe the price wars in this segment may be over. Others aren't so sure, though. Analysts Alex. Brown & Sons report that while prices for domestic packages showed little movement in 1989, that could change if financially troubled Emery Worldwide is able to stabilize its recent market share losses.

Pricing is certainly on the mind of Federal Express, which saw its growth fall to only 10 percent in April, its lowest total in almost 13 years. Analysts say the drop was related to the April 1 price hike.

The Forwarder's Fate?

Inextricably linked with the fortunes and strategies of integrated express carriers like Federal are the airfreight forwarders, sometimes called "pure" forwarders, because they do not operate any aircraft of their own.

There appear to be two basic schools of thought. One says the pure freight forwarder is marching

continued

1989 REVENUES FOR A SAMPLE OF MAJOR U.S. BASED FORWARDERS
(Millions of Dollars)

Company	1989 Revenue
Air Express International	$514.40
Harper Group (Circle Air Freight)	398.31
Profit Freight Systems	205.46
Fritz Air Freight	174.00
Intertrans	169.26
Amerford International	130.00
Pilot Air Freight	76.00
Right-O-Way	60.00
Skyway Freight Systems	40.00
Eden Air Freight	25.00
Target Air Freight	19.60

Source: Company Supplied

Data not available for certain major forwarders including Seko, Associated and Meyers.

U.S. INTERNATIONAL AIR EXPORT GROWTH
(Thousands)

	Shipments	Carrier Revenue
1986	25,442	3,199,549
1987	32,508	3,725,107
1988	39,572	4,451,820
1989	47,435	5,122,539
Percent Growth		
1987/86	27.8%	16.4%
1988/87	21.7%	19.5%
1989/88	19.9%	15.1%

Source: The Colography Group, Inc.

LEADING DOMESTIC AIR CARGO COMPANIES SHIPMENT MARKET SHARE TRENDS

	Percent of Total Shipments 1987	1988	1989
Federal Express*	41.7	42.4	43.0
Emery/CF**	6.5	5.4	3.8
Airborne	7.6	8.4	10.0
DHL	2.2	2.5	2.6
Express Mail	9.0	7.9	8.1
UPS	24.7	25.7	25.7
BAX/WTC	0.7	0.7	0.6
Total Top	92.4	93.0	93.8
All Other	7.6	7.0	6.2
Total Market	100.0	100.0	100.0

*** Federal Express acquired Flying Tigers on February 15, 1989. Data includes Flying Tigers in 1989.**
**** CF acquired Emery on April 1, 1989. Data includes combined company shares.**

LEADING DOMESTIC AIR CARGO COMPANIES REVENUE MARKET SHARE TRENDS

	Percent of Total Revenue 1987	1988	1989
Federal Express*	31.9	32.5	34.2
Emery/CF**	9.4	8.2	7.8
Airborne	4.9	5.1	5.8
DHL	1.5	1.6	1.7
Express Mail	4.9	4.5	4.3
UPS	16.3	17.3	17.6
BAX/WTC	3.3	3.3	3.1
Total Top 7	72.2	72.5	74.5
All Other	27.8	27.5	25.5
Total Market	100.0	100.0	100.0

*** Federal Express acquired Flying Tigers on February 15, 1989.**
**** CF acquired Emery on April 1, 1989.**
Source: The Colography Group, Inc.

While its recent woes may not be reflected here, Federal Express continues to pick up market share. Airborne and UPS are also gaining.

slowly but steadily toward extinction, as integrated carriers begin to offer some of the same services shippers have traditionally relied on forwarders for and more airlines market their services directly to shipper customers. The other line of reasoning holds that pure forwarders are in the best position possible to capitalize on a wave of new lift capacity as domestic airlines add aircraft.

On the international front, U.S. airfreight exports booked by forwarders grew by 15 percent in 1989 to $1.4 billion, according to Cargo Network Services (CNS), a division of the International Air Transport Association (IATA). CNS administers IATA's Cargo Accounts Settlement System, the mechanism used to rationalize cargo sales settlements between forwarders and the airlines. ■

U.S. DOMESTIC AIR CARGO SHIPMENT GROWTH
(Revenue in Thousands)

	Overnight Envelopes/ Letters	Overnight Packages	Overnight Freight	Deferred Packages	Deferred Freight	Total All Services
1986	193,171	85,503	10,538	87,834	15,240	392,286
1987	223,206	102,031	11,015	105,927	17,009	459,188
1988	269,772	121,446	12,168	124,462	19,522	547,370
1989	321,405	142,911	13,150	144,982	20,985	643,433
Percent Growth						
1987/86	13.5%	16.2%	4.3%	17.1%	10.4%	14.6%
1988/87	17.3%	16.0%	9.5%	14.9%	12.9%	16.1%
1989/88	19.1%	17.7%	8.1%	16.5%	7.5%	17.5%

Source: The Colography Group, Inc.

The growth for overnight and deferred airfreight shipments continues to be impressive. The numbers for overnight envelopes are surprising; most observers figured fax would cut deeply into envelope growth.

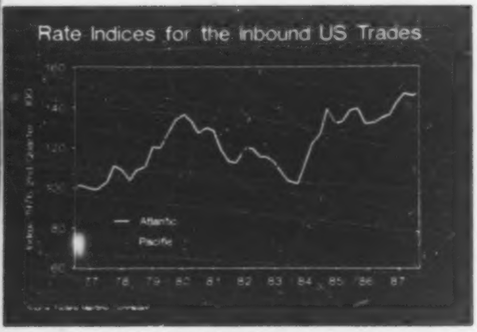
DANZAS: THE EUROPEANS ARE HERE

If your image of a freight forwarder is those hard working folks in the tiny office on the airport's frontage road, here's a different image for you to consider. Danzas Group, based in Switzerland, is a huge international transportation conglomerate, with total 1989 revenue of U.S.$5.3 billion. New U.S. operations are a significant part of that success.

Last year Danzas initiated its penetration of the U.S. market with the acquisition of Northern Air Freight, a 600-employee firm based in Bellevue, Wash. This helped boost the number of offices Danzas has worldwide from 79 to 706. Werner Wettstein, president and CEO of the Danzas Group, describes the acquisition as one of the company's major accomplishments.

"Danzas' key markets in this country are domestic and international airfreight services, and also ocean freight and customs brokerage service," he says. "We offer these capabilities to a rapidly growing number of U.S. shippers who need heavy freight transportation linking U.S. markets with Danzas' extensive European distribution system." Northern was an immediate contributor, providing 21 percent of Danzas' international airfreight revenue. The company's products range from traditional airfreight consolidation to door-to-door delivery and full charters.

While Danzas hopes to carve out a nice piece of the U.S. domestic airfreight market, the real goal is to achieve an optimum position for tying European, North American and Pacific Rim logistics into a tidy package. The European end is in place, and continues to grow. Full load transport is the parent company's bread and butter, with a 30-terminal network spread across the continent. An express network called EURAPID is registering annual growth in the 40 percent range. A full-service, Europe-wide warehousing and distribution operation is being constructed. Plans are also afoot for expansion into Eastern Europe and the Pacific Rim region.



Rates declined 15.9 % from the beginning of 1984 to the end of 1988 on a per container average.

Battle for market share continues

The dramatic rate stabilization programs of the 1980s have moved the ocean shipping industry to an even keel. However, fierce competition exists for market share as carriers seek to differentiate themselves from each other.

By E.J. Muller, Senior Editor

Despite constant flurries of controversy and antagonism between ocean carriers and their customers, there's a general feeling, at least from a user's perspective, that the state of ocean shipping is currently stable.

The most positive recent development is the better balance that has been registered between waterborne imports and exports. In the early 1980s it was the dearth of U.S. exports that led carriers to attempt dramatic rate stabilization programs as a way of offsetting the cost of outbound backhaul sailings that merely repositioned containers for the booming import business. Dire predictions of industry collapse were common in the mid-1980s; without sufficient return carriers would spiral into bankruptcy, the doomsayers predicted, and shippers would suffer from the resultant lack of capacity.

Although the 1980s saw various mergers, joint ventures and trade route shifts among carriers, the net effect on shippers has been minimal. The capacity is still there, and rates are, in most cases, a bargain.

That never happened, of course. Although the 1980s saw various mergers, joint ventures and trade route shifts among carriers, the net effect on shippers has been minimal. The capacity is still there, and rates are, in most cases, a bargain. The only major failing was United States Line's bankruptcy in 1986, which did not represent dwindling industry fortunes as much as misguided management strategies.

In its review of the industry's last five years, the Federal Maritime Commission concluded that despite all the jockeying for position done by carriers, particularly in the major trade lanes of the Pacific and North Atlantic, no real "volatility" exists for shippers.

Carrier Competition

What does exist, among carriers, is a highly competitive battle for market share. A maritime analyst at the consulting firm of Temple, Barker & Sloane sums up the current state of the carrier industry this way: "The premier, or 'full revenue' lines—Maersk, APL and Sea-Land—have achieved leadership positions, but are now seeking ways to differentiate themselves from each other. The two American carriers have aggressively positioned themselves as 'total transportation' companies. All have embarked on publicized Quality programs. All have touted improved high-tech communications systems."

But the second-tier carriers, those with a slightly lower profile (and lower overhead) are putting pressure on the Big Three. Lines such as Mitsui O.S.K., K Line, OOCL and NYK have implemented their own stacktrain services and information systems in direct competition with the trailblazers at the top. Evergreen, which continues to amass market share as a lower cost independent carrier, is "forcing the higher priced, full-service carriers to take a hard look at their cost structure," the analyst notes.

At the same time, Evergreen is feeling the heat from other low-cost entrants in the trades, especially Korean-based carriers such as Hanjin Shipping and Hyundai Merchant Ma-

continued

rine. And waiting in the wings is China Ocean Shipping Co., which increased its market share more than 80 percent in 1989, through an extremely reduced rate strategy.

The result of all this, for shippers, is a constant improvement of both basic services and value-added offerings on the part of competing carriers. It's a classic business pattern.

Conference Changes?

The Shipping Act of 1984 afforded so much freedom of pricing that conferences, looking to protect members' revenue from predatory independents, adopted a circle-the-wagons mentality that alienated many customers. At a time when "customer responsiveness" is on the lips of every transportation sales rep, conference lines banding together to enforce general rate increases don't go over too well with the shipping public.

But that may change in the 1990s. There are strong suggestions, particularly in the Pacific, that a group such as the Transpacific Stabilization Agreement (TSA) may soon supercede some of the inbound conferences. The result may be a shift away from controlling how member lines deal with their customers—and toward how carriers deal among themselves. TSA's initial strategy is to achieve rate stabilization by policing carrier capacity; it claims to have no direct involvement in pricing. A similar association might soon be formed in the North Atlantic (one such attempt has already failed).

Some industry analysts believe that this type of management association might be the next version of tariff-based groups like the Asia North America Eastbound Rate Agreement, and that the emphasis will be on rational management of the carrier ranks, rather than dictating what members can and can't offer their customers.

What shippers want from a confer-

continued

A NEW, IMPROVED SEA-LAND?

It seems as though Sea-Land Service Inc., the nation's largest container shipping company, has been around forever. But in case you haven't noticed, business at Sea-Land isn't anything like it used to be. Its parent company, rail giant CSX Corp., has turned up the heat on the ocean shipping subsidiary, demanding that it deliver a greater return on investment.

Alex Mandl was appointed chairman and CEO in late 1988, with a mandate to bolster ROI. He was also determined to return a sense of purpose and enthusiasm to a company that had been demoralized by a succession of ownership and upper management changes during the late 1980s.

Under Mandl's aggressive stewardship, Sea-Land has embarked on a mission to transform itself into a more market-driven company. To achieve this, the company has dramatically restructured, cutting out many management layers and putting more responsibility in the hands of regional executives in the Atlantic, Pacific, Caribbean/Central American, and Alaskan trades. Greater local autonomy, Mandl believes, will improve customer service and provide greater job satisfaction to Sea-Land's 8,000 employees.

In the process, Sea-Land hopes to accomplish its four main goals: profitable use of capital assets (which has led to numerous cost-saving space sharing pacts with other lines); greater efficiency in daily operations; a streamlined decision-making process, and cementing the line's position as a premier carrier, able to charge premier rates.

Another difference at the "new" Sea-Land is its attitude toward operating differential subsidy (ODS). For decades it has been the only U.S. -flag carrier not to receive government funds to offset the higher costs associated with the U.S. crews. With global competition even greater, Sea-Land seeks to reverse its subsidy status during a time when the entire ODS system is due for reform.

When Sea-Land announces its 1990 results, CSX wants to see a return in the area of 13 to 14 percent. Mandl believes that management streamlining and greater customer responsiveness will enable the line to reach that result. "What it all boils down to," he says, "is being more attentive than ever to the services our customers need. We must design services around those needs, and be ready to provide those services on a global scale."

ence carrier is security. Traditionally, conference lines are perceived as more financially stable than their independent counterparts. But that notion is being eroded. "There is actually a fairly small segment of the market that is so service sensitive they will only use conference carriers," says a TBS analyst. "Independents have closed that service gap, and most shippers now feel safe using them."

So no longer will security be the main issue. Flexibility, innovation and responsiveness are what shippers want to see from conferences in the 1990s.

Service contracts are becoming the preferred way of doing business, but shippers would like to see broader, more imaginative use of such pacts. Last year DuPont entered into a landmark multitrade contractual deal with independent carrier OOCL, which broke from the rigid trade route structure of most contracts. It remains to be seen if this pact will be influential.

What is certain is that the use of service contracts has steadily risen since they were first introduced in 1984. That year a total of 459 such pacts were inked between carriers (both conference and independent) and shippers. In 1988, the last year of FMC's five-year Shipping Act study, more than 5,000 service contracts were signed. Most of these are for point-to-point service, involve a specific commodity and are one year in duration. In the 1990s service contracts will become even more prevalent as shippers seek to lock in a fixed rate, and carriers seek to lock in guaranteed cargo volumes.

continued

OCEAN CARRIERS RANKED BY IMPORT VOLUME
NORTHERN EUROPE TO U.S. EAST COAST 1989 v. 1988

Carrier	1989 TEUs	1989 Mkt Sh	1988 TEUs	1988 Mkt Sh	% Volume Change
Sea-Land	91,929	12.8%	87,372	13.0%	+5.22%
Hapag Lloyd	73,122	10.2%	71,700	10.7%	+1.98%
Maersk	73,072	10.2%	35,698	5.3%	+104.69%
ACL	67,408	9.4%	80,308	12.0%	-16.06%
Evergreen	63,172	8.8%	66,977	10.0%	-5.68%
OOCL	58,376	8.1%	53,132	7.9%	+9.87%
P&O Container	53,008	7.4%	52,892	7.9%	+0.22%
Polish Ocean Line	48,809	6.8%	46,637	7.0%	+4.66%
Nedlloyd	38,368	5.3%	28,569	4.3%	+34.30%
Med. Shipping	33,778	4.7%	30,896	4.6%	+9.33%
Topgallant	27,238	3.8%	24,949	3.7%	+9.17%
Independent Line	17,348	2.2%	14,613	2.2%	+18.72%
Senator	13,933	1.9%	16,640	2.5%	-16.27%
Atlantic Cargo	12,184	1.7%	11,902	1.8%	+2.37%
Atlantik Express	11,172	1.6%	10,280	1.5%	+8.68%
Lykes Lines	9,401	1.3%	7,152	1.1%	+31.45%
CGM	7,736	1.1%	6,965	1.0%	+11.07%
Amtrans	7,486	1.0%	11,015	1.6%	-32.04%
Gulf Container	6,586	0.9%	5,318	0.8%	+23.84%
Deppe	2,751	0.4%	2,972	0.4%	-7.44%
Carol Line	2,369	0.3%	4,399	0.7%	-46.15%
	719,246		670,386		+7.29%

Source: Journal of Commerce/Piers

Freight Rates

What carriers would like to see, however, is a better return on those cargo volumes. They are probably as tired of saying it as shippers are of hearing it, but carriers never miss a chance to stress that today's ocean freight rates are stuck at 1979 levels, without any adjustment for inflation. In the Pacific, for example, rates declined 15.9 percent from the beginning of 1984 to the end of 1988 on a per container average, notes consulting firm Booz, Allen & Hamilton. Factor in inflation during that period (a 16.3 percent climb) and rates during that time tumbled 27.7 percent in "real terms."

There are some analysts, of course, who stress that simple supply and demand is at the root of all this. Trade has not grown at the prodigious rate many carriers banked on when they launched massive new building campaigns in the early 1980s. Even though imports and exports have become more balanced (at least in volume, if not value), overall trade growth has been somewhat flat. Excess capacity keeps rates down.

As Sally Smith, industry analyst for the Alex. Brown consulting firm, sees it, "Rates are low, but costs have come down, too. Larger capacity ships are intended to lower per container slot costs. Rates are down now not just because of supply and demand, but because of economies of scale." She suggests that it may be unrealistic to use 1979 rates as a benchmark, since so much of the equipment used by carriers today is

continued

OCEAN CARRIERS RANKED BY EXPORT VOLUME U.S. EAST COAST TO NORTHERN EUROPE 1989 v. 1988

Carrier	1989 TEUs	1989 Mkt Sh	1988 TEUs	1988 Mkt Sh	% Volume Change
Sea-Land	57,396	11.0%	60,916	13.9%	-5.78%
Hapag Lloyd	51,208	9.8%	48,673	11.1%	+5.21%
OOCL	47,111	9.0%	36,753	8.4%	+28.18%
Maersk	45,945	8.8%	15,800	3.6%	+190.79%
ACL	43,546	8.3%	46,288	10.5%	-5.92%
P.O.L.	43,433	8.3%	39,951	9.1%	+8.72%
P&O Container	41,845	8.0%	39,819	9.1%	+5.09%
Topgallant	24,567	4.7%	5,565	1.3%	+341.46
Nedlloyd	22,007	4.2%	18,339	4.2%	+20.00%
Med. Shipping	21,161	4.0%	19,130	4.4%	+10.62%
Ind. Cont.	18,254	3.5%	15,908	3.6%	+14.75%
Senator	14,275	2.7%	10,277	2.3%	+38.90%
Atlantik Ex.	10,076	1.9%	9,260	2.1%	+8.81%
Atlantic Cargo	9,588	1.8%	9,334	2.1%	+2.72%
CGM	6,537	1.3%	5,115	1.2%	+27.80%
Evergreen	51,709	9.9%	44,185	10.1%	+17.03%
Gulf Cont.	4,909	0.9%	4,253	0.1%	+15.42%
Lykes Lines	3,200	0.6%	66	0.0%	+4748.48%
ABC Container	3,087	0.6%	4,114	0.9%	-24.96%
Amtrans	1,418	0.3%	2,717	0.6%	-47.81%
Carol Line	1,135	0.2%	1,605	0.4%	-29.28%
Wallenius	489	0.1%	961	0.2%	-49.12%
	522,896		439,029		+19.10%

Source: Journal of Commerce/Piers

different then what was used two decades ago.

But what is also different is the scope of the ocean carrier business. The leaders in new equipment technology aren't only focusing on the ocean side of the business. A vast amount of spending has been on the inland side, to enable liner companies to offer attractive intermodal through-rates and single source accountability to shippers. But, according to numerous consulting firms, few carriers offering such service are recovering their inland costs. "Only those who are extremely efficient at balancing costs," says one analyst, quickly adding that "there aren't many who are profitable."

So here's the scenario: Liner companies are compelled to "keep up with the Jones" by expanding their service portfolios to include a wider range of intermodal services. That costs money, and lots of it. Trying to get it through raising ocean freight rates is dangerous – the margins are already meager, and they risk alienating those port-to-port shippers who don't use the intermodal services.

This scenario raises doubts about the profitability of many carriers. Alex. Brown's Sally Smith notes that she hasn't been recommending stock purchase of U.S.-flag carriers lately. "There is still a lot of uncertainty in the market," she says, "particularly where world economic growth and trade flows are con-

continued

OCEAN CARRIERS RANKED BY EXPORT VOLUME
U.S. PACIFIC COAST TO FAR EAST 1989 v. 1988

Carrier	1989 TEUs	1989 Mkt Sh	1988 TEUs	1988 Mkt Sh	% Volume Change
APL	226,702	13.9%	184,430	12.3%	+22.92%
Evergreen	158,176	9.7%	131.652	8.8%	+20.15%
Sea-Land	150,494	9.2%	146,842	9.8%	+2.49%
NYK	138,005	8.5%	109,242	7.3%	+26.33%
Mitsui OSK	131,085	8.1%	107,076	7.1%	+22.42%
K Line	131,952	8.1%	118,295	7.9%	+11.54%
Hanjin	109,379	6.7%	112,451	7.5%	-2.73%
Hyundai	109,951	6.8%	100,825	6.7%	+9.05%
Maersk	105,970	6.5%	98,280	6.5%	+7.82%
Nippon Liner System	74,578	4.6%	98,297	6.6%	-24.13%
OOCL	68,900	4.2%	58,642	3.9%	+17.49%
Cosco	49,124	3.0%	29,581	2.0%	+66.07%
Neptune Orient Line	43,903	2.7%	42,330	2.8%	+3.72%
EAC	20,924	1.3%	20,828	1.4%	+0.46%
Gearbulk	19,539	1.2%	20,088	1.3%	-2.73%
Mexican Line	16,321	1.0%	10,033	0.7%	+62.67%
Yang Ming	18,612	1.1%	8,335	1.1%	+123.30%
Westwood	16,165	1.0%	11,758	0.8%	+37.48%
Zim	12,167	0.7%	13,374	0.9%	-9.02%
Nat'l Ship. of Philippines	8,896	0.5%	8,895	0.6%	+0.01%
Senator	8,013	0.5%	7,590	0.5%	+5.57%
Star	5,069	0.3%	13,744	0.9%	-63.12%
Hong Kong Is.	3,622	0.2%	20,468	1.4%	-82.30%
Showa	0	0.00%	27,423	0.018%	-100.00%
	1,627,547		1,500,479		+8.47%

Source: Journal of Commerce/Piers

cerned." It is unclear whether carriers' rate increases will stick, she says. "In a stronger marketplace, that might not be a problem. But right now it's a difficult market, and ocean carrier stocks are not particularly attractive."

As another analyst puts it: "The solution to carrier profitability is healthy trade growth."

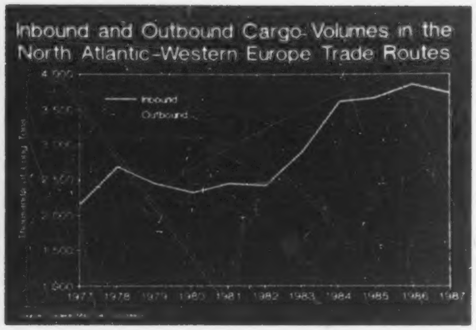
Whether or not we see such growth, one trend that seems sure to increase is space rationalization among carriers. Shippers can expect to see more liner companies chartering space on each others' vessels as an effective way of filling all the new capacity that operators will be bringing into various trades. The announcement in mid-1990 that fiercely independent Maersk Line would team up with P&O Containers Ltd. in a joint service between the Far East and Europe seemed to signal that anything was possible in the early months of the 1990s.

What it all comes down to is this: Order books are near full in the world's shipyards for commercial new buildings. More capacity will enter the global trades. Carriers will continue to aggressively compete for cargo to fill those ships. And shippers will continue to benefit from ever-improving service at a variety of service levels. As business becomes even more global in nature, flexibility in shipper-carrier contractual relationships will have to follow suit, sooner rather than later. ■

OCEAN CARRIERS RANKED BY IMPORT VOLUME FAR EAST TO U.S. PACIFIC COAST 1989 v. 1988

Carrier	1989 TEUs	1989 Mkt Sh	1988 TEUs	1988 Mkt Sh	% Volume Change
APL	397,842	17.1%	338,555	16.1%	+17.51%
Sea-Land	258,465	11.1%	221,624	10.6%	+16.62%
Evergreen	224,744	9.7%	196,015	9.3%	+14.66%
K Line	193,055	8.3%	156,667	7.5%	+23.23%
Hanjin	178,544	7.7%	147,560	7.0%	+21.00%
Maersk	161,167	6.9%	142,459	6.8%	+13.13%
NYK Line	152,959	6.6%	129,518	6.2%	+18.10%
Hyundai	133,419	5.7%	119,771	5.7%	+11.40%
Mitsui OSK	131,352	5.7%	113,387	5.4%	+15.84%
OOCL	105,257	4.5%	91,808	4.4%	+14.65%
Nippon Liner System	83,724	3.6%	104,724	5.0%	-20.05%
Cosco	64,632	2.8%	35,661	1.7%	+81.24%
Neptune Orient Line	61,049	2.6%	59,928	2.9%	+1.87%
Yang Ming	37,077	1.6%	20,505	1.0%	80.82%
Westwood	26,233	1.1%	33,445	1.6%	-21.56%
EAC	21,400	0.9%	21,749	1.0%	-1.60%
Senator	15,682	0.7%	13,105	0.6%	+19.66%
Mexican Line	13,962	0.6%	15,110	0.7%	-7.60%
Nat. Ship. Philippines	13,864	0.6%	12,766	0.6%	+8.60%
Zim	11,595	0.5%	14,220	0.7%	-18.46%
Gearbulk	22,360	1.0%	21,561	1.0%	+3.71%
Hong Kong Is.	7,619	0.3%	48,558	0.023%	-84.31%
Star	5,952	0.3%	20,058	1.0%	-70.33%
Showa	0	0.0%	21,548	0.01%	-100.00%
	2,321,953		2,100,302		+10.55%

Source: Journal of Commerce/Piers



Tonnage has increased 6% over the past decade. Inbound has grown faster, though outbound is on the rebound.

Smaller ports gain amid load centers

Smaller ports have invested in their facilities to attract and keep cargo. Yet key issues, including the environment and land development, loom over all ports.

By E.J. Muller, Senior Editor

A few years ago, it appeared that "load centers," massive port hubs, would control the vast majority of international ocean trade, and that smaller localized ports might suffer. But according to Erik Stromberg. president of the American Association of Port Authorities, "Predictions that U.S. cargo flows would be concentrated at a small number of megaports, leaving the rest of the port system to wither in the wind and die, are not being borne out. We are seeing increasing investment, not only in new container handling facilities, but in terminals specifically oriented toward breakbulk and new bulk cargoes."

This is partly due to tributary ports serving as feeders to the larger metropolitan-based load centers. But many of these smaller ports develop their own liner service, Stromberg notes, to attract shipping lines looking to avoid delays in berthing at more congested areas. Certain breakbulk cargoes, such as steel, automobiles and lumber, move routinely in chartered ships that regularly call at non-load center ports.

The outlook is good for non-containerized ports, Stromberg says. Considerable quantities of general cargo will continue to move in breakbulk form, and one of the major reasons for that is the often poor quality of container handling equipment at ports in less-developed nations, which lead importers or exporters to prefer breakbulk shipments to and from those ports.

Also, "substantial quantities of breakbulk cargo continue to move, even through ports with advanced container handling capabilities," says Stromberg. There are also a number of small- and medium-sized general cargo ports entirely breakbulk in nature, he notes.

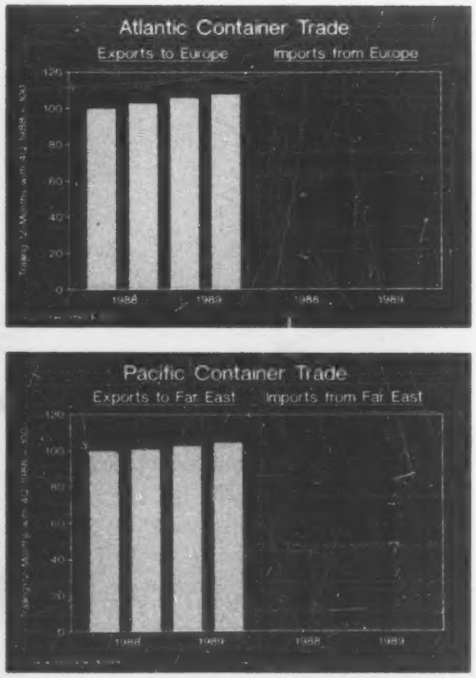
Another factor that has helped foster development of small- and medium-sized ports is the high cost of real estate in urban areas where load centers exist. It is also in those areas where environmental concerns, such as air and sea pollution, have the highest priority. This often leads port commissions, under political pressure, to balance transportation activities with other, less controversial, revenue producers. Situations like these have spurred the "boutiqueing" of many waterfront areas.

AAPA's Stromberg notes that the debate of appropriate waterfront usage (and who pays) is being played out across the nation. Its impact has been uneven in terms of the actual loss of cargo handling facilities, he claims, but "felt more strongly in smaller ports."

A solution to the debate, he believes, can be seen at the Port of Baltimore, where older harbor areas that no longer have the deep channel or space requirements of major ship lines have been developed with marinas, restaurants and retail shops, while maritime facilities have been shifted to more remote areas better suited to commercial port needs.

Similar plans have been undertaken in major ports such as Seattle,

continued



Containership volume in both the Atlantic (top) and Pacific (bottom) trades rose in 1989 despite a slowdown in the U.S. economy. Exports from the U.S. to the Far East grew fastest.

U.S. WATERBORNE FOREIGN COMMERCE – 1989
PORT RANKING – BY CARGO VALUE
(Millions of Dollars)

IMPORTS			EXPORTS			TOTAL		
Rank	Port	Value	Rank	Port	Value	Rank	Port	Value
1.	Los Angeles	43,630	1.	New York/New Jersey	13,582	1.	Los Angeles	55,050
2.	New York/New Jersey	35,547	2.	Houston	11,928	2.	New York/New Jersey	49,129
3.	Long Beach	33,165	3.	Los Angeles	11,420	3.	Long Beach	42,269
4.	Seattle	20,952	4.	Long Beach	9,104	4.	Seattle	26,686
5.	Tacoma	20,288	5.	Hampton Roads	8,527	5.	Tacoma	25,707
6.	Baltimore	11,112	6.	Baltimore	7,315	6.	Houston	22,443
7.	Houston	10,515	7.	New Orleans	6,252	7.	Baltimore	18,427
8.	Oakland	10,173	8.	Charleston	6,185	8.	Hampton Roads	16,705
9.	Hampton Roads	8,178	9.	Oakland	6,152	9.	Oakland	16,325
10.	Charleston	7,450	10.	Seattle	5,734	10.	Charleston	13,635
11.	Savannah	5,392	11.	Gramercy (LA)	5,667	11.	New Orleans	11,370
12.	New Orleans	5,118	12.	Tacoma	5,419	12.	Savannah	9,428
13.	Jacksonville	5,097	13.	Savannah	4,036	13.	Gramercy (LA)	8,211
14.	Boston	4,907	14.	Miami	3,901	14.	Portland (OR)	7,149
15.	Philadelphia	4,879	15.	Portland (OR)	3,156	15.	Miami	6,796
16.	Portland (OR)	3,993	16.	Baton Rouge	2,068	16.	Jacksonville	6,444
17.	Corpus Christi	3,252	17.	St. Rose (LA)	1,822	17.	Philadelphia	5,805
18.	Port Everglades	3,060	18.	Wilmington (NC)	1,680	18.	Boston	5,535
19.	Miami	2,895	19.	Tampa	1,617	19.	Port Everglades	4,580
20.	Gramercy (LA)	2,544	20.	Port Everglades	1,520	20.	Baton Rouge	4,177
21.	Wilmington (DE)	2,415	21.	Destrehan	1,507	21.	Corpus Christi	4,010
22.	Texas City	2,256	22.	Anchorage	1,392	22.	Wilmington (DE)	3,475
23.	Baton Rouge	2,109	23.	Galveston	1,351	23.	San Juan	2,743
24.	Portland (ME)	1,956	24.	Jacksonville	1,347	24.	Texas City	2,668
25.	Port Arthur	1,927	25.	Mobile	1,328	25.	Wilmington (NC)	2,594

U.S. WATERBORNE FOREIGN COMMERCE – 1989
PORT RANKING – BY CARGO VOLUME
(Short Tons, 000s Omitted)

IMPORTS			EXPORTS			TOTAL		
Rank	Port	Volume	Rank	Port	Volume	Rank	Port	Volume
1.	New York/New Jersey	52,896	1.	Hampton Roads	54,544	1.	Hampton Roads	63,898
2.	Houston	39,842	2.	Gramercy (LA)	40,119	2.	Gramercy (LA)	62,748
3.	Corpus Christi	32,667	3.	New Orleans	27,453	3.	Houston	62,619
4.	Philadelphia	23,510	4.	Houston	22,777	4.	New York/New Jersey	60,029
5.	Gramercy (LA)	22,629	5.	Portland (OR)	14,983	5.	New Orleans	44,811
6.	Texas City	19,877	6.	Baltimore	14,178	6.	Corpus Christi	37,716
7.	Baton Rouge	19,873	7.	Long Beach	12,883	7.	Baton Rouge	31,694
8.	Lake Charles	18,805	8.	Tacoma	12,841	8.	Baltimore	30,977
9.	New Orleans	17,357	9.	St. Rose (LA)	12,220	9.	Philadelphia	26,675
10.	Baltimore	16,799	10.	Mobile	11,834	10.	Los Angeles	24,799
11.	Port Arthur	16,645	11.	Baton Rouge	11,821	11.	Lake Charles	23,700
12.	Pascagoula	16,092	12.	Los Angeles	11,241	12.	Long Beach	23,469
13.	Los Angeles	13,558	13.	Destrehan (LA)	10,277	13.	Texas City	21,547
14.	Christiansted (VI)	13,478	14.	Seattle	8,934	14.	Port Arthur	19,654
15.	Paulsboro (NJ)	12,624	15.	New York/New Jersey	7,133	15.	Pascagoula	18,934
16.	Wilmington (DE)	11,927	16.	Duluth/Superior	6,176	16.	Mobile	18,469
17.	Boston	11,639	17.	Kalama	6,134	17.	Portland (OR)	18,103
18.	Long Beach	10,586	18.	Vancouver (WA)	5,603	18.	Tacoma	17,924
19.	Hampton Roads	9,354	19.	Charleston	5,592	19.	Seattle	14,556
20.	Marcus Hook (PA)	9,206	20.	Galveston	5,486	20.	Christiansted (VI)	13,813
21.	Beaumont	7,217	21.	Toledo	5,452	21.	St. Rose (LA)	13,277
22.	Mobile	6,635	22.	Savannah	5,308	22.	Paulsboro (NJ)	12,915
23.	Portland (ME)	6,421	23.	Conneaut	5,134	23.	Wilmington (DE)	12,315
24.	Tampa	6,283	24.	Corpus Christi	5,049	24.	Boston	12,173
25.	Chester (PA)	6,065	25.	Lake Charles	4,895	25.	Beaumont	10,666

Source: U.S. Bureau of the Census

Norfolk and Los Angeles, and at smaller ones in Bellingham, Wash., and Cape Canaveral, Fla.

The early 1980s saw Pacific Coast ports assume a dominant position, in terms of cargo volume and value, due to growth of trade between North America and the Far East. While it is expected that Pacific ports will continue to enjoy steady growth, Stromberg expects to see the 1990s bring a "re-invigoration" of the Atlantic trades. Most of this business will move through East and Gulf Coast ports. These port regions might also benefit from economic resurgence in Latin America, the Caribbean and perhaps West Africa.

Looming over all port operations, however, are significant environmental issues, which can affect all phases of port development and operation, and tend to have hefty price tags attached. Further port development in some regions could, for instance, be hampered due to the increased emphasis on hazardous waste disposal.

"Public agencies are wary of building facilities on or near areas where toxic waste could come back to haunt them," says MIT's Professor of Marine Systems Henry Marcus. "If you're going to build a port, you'll want it in a pristine area," he says.

"In many cases," says Stromberg, "environmental protection measures will determine whether or not a project has sufficient net benefits to be attempted." Some issues, such as the pros and cons of open water disposal of dredged material (necessary to accommodate a new generation of larger containerships) have enormous consequences for a port's maritime viability. "This issue," says Stromberg, "is the major environmental issue facing ports today." ■

U.S. WATERBORNE FOREIGN COMMERCE 1986-89
(Millions of Short Tons)

	Calendar Year				
EXPORTS	**1986**	**1987**	**1988**	**1989***	**Change 1988/89**
United States	330.9	360.0	400.9	423.7	+5.7%
North Atlantic	69.0	62.7	73.5	84.3	+14.7%
South Atlantic	13.7	15.3	18.3	20.2	+10.6%
Gulf	134.8	155.0	162.5	167.7	+3.2%
South Pacific	30.7	33.4	36.9	41.3	+11.9%
North Pacific	50.8	61.6	73.2	73.0	-0.3%
Great Lakes	32.0	32.0	36.6	37.1	+1.4%
IMPORTS	**1986**	**1987**	**1988**	**1989***	**Change 1988/89**
United States	453.4	477.8	516.8	551.0	+6.6%
North Atlantic	168.2	170.2	183.1	178.3	-2.6%
South Atlantic	47.8	53.9	51.1	55.7	+9.0%
Gulf	171.3	184.1	211.5	238.5	+12.8%
South Pacific	36.2	37.6	37.7	41.7	+10.6%
North Pacific	16.5	18.2	17.6	19.4	+10.2%
Great Lakes	13.8	13.9	15.9	17.8	+11.9%
TOTAL	**1986**	**1987**	**1988**	**1989***	**Change 1988/89**
United States	784.7	837.8	917.7	974.7	+6.2%
North Atlantic	237.3	232.9	256.6	262.6	+2.3%
South Atlantic	61.5	69.2	69.4	75.9	+9.4%
Gulf	306.1	339.1	374.0	406.2	+8.6%
South Pacific	66.9	71.0	74.6	83.0	+11.3%
North Pacific	67.3	79.8	90.8	92.4	+1.8%
Great Lakes	45.8	45.9	52.5	54.9	+4.6%

U.S LINER TRADES 1986-89
(Millions of Short Tons)

	Calendar Year				
EXPORTS	**1986**	**1987**	**1988**	**1989***	**Change 1988/89**
United States	35.6	40.8	47.2	51.6	+9.3%
North Atlantic	6.3	6.6	8.2	9.8	+19.5%
South Atlantic	6.3	7.1	8.7	9.6	+10.3%
Gulf	7.6	9.1	9.2	8.8	-4.4%
South Pacific	8.6	10.4	12.5	14.2	+9.1%
North Pacific	6.6	7.5	8.4	9.1	+8.3%
Great Lakes	.3	n/a	n/a	n/a	n/a
IMPORTS	**1986**	**1987**	**1988**	**1989***	**Change 1988/89**
United States	42.3	45.6	43.1	45.3	+5.1%
North Atlantic	15.3	15.6	14.4	14.7	+2.1%
South Atlantic	6.1	6.6	6.2	6.3	+1.6%
Gulf	4.3	4.8	4.8	4.2	-12.5%
South Pacific	12.7	14.2	13.4	15.4	+14.9%
North Pacific	3.8	4.1	3.9	4.3	+10.3%
Great Lakes	.1	n/a	n/a	n/a	n/a
TOTAL	**1986**	**1987**	**1988**	**1989***	**Change 1988/89**
United States	77.9	86.4	90.3	96.9	+7.3%
North Atlantic	21.6	22.2	22.6	24.5	+8.4%
South Atlantic	12.4	13.7	14.9	15.9	+6.7%
Gulf	11.9	13.9	14.0	13.0	-7.1%
South Pacific	21.3	24.6	25.9	29.6	+14.3%
North Pacific	10.4	11.6	12.3	13.4	+8.9%
Great Lakes	.4	n/a	n/a	n/a	n/a

***Preliminary**
NOTE: Due to rounding, port range volumes may not sum to national totals.
SOURCE: U.S. Bureau of the Census